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Gary Beach
Publisher

At Computerworld, we are so confident that our newspaper is the most useful publication for information systems professionals that we announce the following:

The Computerworld Challenge

The Computerworld Challenge is a survey designed to help you better understand your customers and prospects and underscore Computerworld's leadership position in usefulness to IS. Here's what you do to be part of the challenge:

- Send us a list of 1,000 names of IS professionals, selected on an 'nth' name basis from your customer/prospect database, **along with any five questions you'd like asked in the survey.**
- Computerworld will include two (unaided) questions:

  (1) "which one IS publication do you find most useful?"

  (2) "which one IS publication would you read if you could only read one?"

From the list you supply, an independent research firm will complete 100 telephone interviews asking the seven questions. **The deadline to participate in the Computerworld Challenge is December 31.**

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All the best,

Gary J. Beach

Gary Beach
Publisher

P.S. On the inside back cover of this wrap you will find usefulness and readership data from the latest MRI and Adams Company Information Management Technology studies. Be a part of the challenge — ask your customers which IS publication they prefer.

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The Newspaper of Information Systems Management
November 30, 1992, Vol. 26, No. 48, 140 Pages, $2/Copy, $48/Year

COMPUTERWORLD

Some users are wary of encrypted software keys

By Thomas Hoffman and Johanna Ambrosio
NEW YORK

■ While many users like flexible enterprise systems licensing options, some are uneasy that they must also adopt specially encrypted keys to prevent them from using unlicensed software.

Vendors contend the keys are a competitive necessity to ensure they get the license revenues that are coming to them. Among the vendors that use encrypted keys are Computer Associates International, Inc., SAS Institute, Inc., Boole & Babbage, Inc. and Legent Corp.

Under CA's Enterprise Licensing program, users are required to adopt Total Client Care, an on-line support program [CW, Nov. 16]. One provision of Total Client Care requires users to run licensed software using encrypted keys for each CPU and license under the attached License Management Program.

The keys have several lines of code that contain the expiration date of the software license. Thirty days before a license expires, the keys begin issuing daily messages warning the user of the impending expiration. Users have a 30-day grace period after expiration to renew the license. If the license is not renewed, the coded keys instruct the CPU to stop running the software.

"We have not accepted any software with encrypted keys," said Val Morgan, a database administrator at a large Pacific Northwest aerospace firm. Morgan, whose company runs four CA-IDMS 10.2 database

Encryption, *page 12*

IBM moves to boost client/server unit

Company will establish custom software demo centers

By Johanna Ambrosio
ARMONK, N.Y.

■ IBM last week formally disclosed a beefed-up organization spearheading its efforts in the client/server arena. Nevertheless, some customers said IBM has at best an even shot in this emerging market and that they will continue to consider other vendors' wares.

A programming group at IBM's Endicott, N.Y., laboratory, which has been in place for about three years, has been tapped to lead IBM's renewed charge into the client/server wars.

The Client/Server Computing Group now reports directly to IBM President Jack Kuehler and has some 800 programmers on whom it can draw for custom projects — more than three times the number of technicians who were attached to the original group.

In addition, IBM said it will form several client/server customer centers around the world to demonstrate client/server systems and help customers test software.

The initial focus of the client/server unit will be to work behind the scenes with IBM's sales force to do custom programming work in the client/server arena, primarily in the systems integration area. As projects are developed, IBM might release the work as formal products, depending on customers' needs, said Marty Clague, general manager of consulting, software and services.

Still, the group is primarily a marketing support organization rather than a full-fledged line of business measured by the usual profit-and-loss parameters, he added.

Observers said successfully tapping the client/server market is critical for IBM as the traditional mainframe continues its gradual decline. However, they added that the road ahead will be tough for the company.

"I'm not sure they know where their customers are or exactly how to put their stake in the

IBM, *page 8*

At your service

IBM established its Client/Server Computing Group in 1989.

Initial products released in September 1990 allow workstation users on networks to share resources, including backup and restore and software distribution.

Last week approximately 500 coders from IBM's Programming Systems line of business were assigned to the client/server unit.

CW Chart: Janell Genovese

Measuring up

Benchmarking helps IS improve competitiveness

By Mitch Betts

After studying how other information systems departments measure user satisfaction, the IS department at Texas Instruments, Inc. in Dallas developed what it believes is the best user survey in the nation, according to its IS quality director, Gary Pollard.

Having said that, Pollard will soon be inundated with calls from other IS managers wanting to copy that success — and he will let them, as long as they agree to share some of their top-notch practices in return.

Welcome to the world of quality benchmarking, in which stealing great ideas is an honorable profession. This sort of benchmarking, not to be confused with hardware performance testing, involves comparing a department's activities with the best practices of other companies.

Benchmarking, *page 20*

Newspaper

DHL revamps with Big Blue

Unix rightsizing targets package tracking, service

By Elisabeth Horwitt
REDWOOD CITY, CALIF.

There is no use rightsizing if you do it wrong. Ask DHL Airways, Inc., which is one year into its third major rightsizing project in two decades.

Having migrated from IBM mainframes to System/36s in 1975 and having moved to Unix in 1986, DHL is now re-engineering around a Unix client/server system based on IBM RISC System/6000s.

Furthermore, not only is DHL bringing back an IBM mainframe to serve as a database repository, but IBM has come on board as combined systems integrator, co-developer and support provider.

The main reason behind this latest re-engineering effort is that

DHL, *page 14*

Andy Freeberg

Michael Lanier *crafted DHL's distributed network strategy*

Executive Briefing

A comprehensive guide to the week's news

RE-ENGINEERING

After getting along without mainframes for 17 years, DHL Airways has put IBM back on its IS team to help lead an effort to re-engineer its Unix-based corporate computing platform. With IBM's help, DHL aims to give Fedex and UPS a run for their money in the U.S. *Pages 1, 14*

Some pioneering IS departments are involved in quality 'benchmarking,' in which stealing great ideas from other companies is an honorable profession. *Pages 1, 20*

DOWNSIZING

Fully 80% of major corporations are interested in downsizing, according to recent studies. But one size doesn't fit all. While some companies will go to highly distributed LANs, others are taking a more low-risk approach and 'rehosting' applications on minicomputers. *Computerworld*'s Buyers' Scorecard and Lab Report rate the leading minis based on user satisfaction and benchmark performance. *Pages 82, 84*

Despite IBM's redoubling of its client/server technical expertise, customers say it still stands at best an even shot when they evaluate suppliers. *Page 1*

INDUSTRY

Kodak unloads its Atex publishing subsidiary to a British investment group. *Page 16*

The top executive at Software AG resigns, but the company promises business as usual. *Page 4*

With its acquisition of Gerber Alley last week, First Data Corp.'s Health Systems Group obtains an international presence and becomes one of the largest providers of health care information systems. *Page 8*

Sequoia users sit tight and wait to see whether the company will right itself. *Page 15*

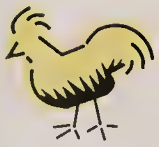
Dell stock slides after a Wall Street analyst questions whether the PC maker artificially boosted quarterly financial reports. *Page 6*

LICENSING ISSUES

Users express mixed emotions on the issue of requiring encryption keys as part of user software licensing agreements. *Page 1*

MANAGEMENT

A recent study concludes that companies completing successful IS projects followed similar patterns of behavior. Particularly key was CEO support. *Page 8*



Long-term planning is for the birds, says Ken Harris, vice president of worldwide IS at KFC Corp. Grand plans consume time, limit flexibility and often get in the way of what customers really want, he says. *Page 33*

We've put together a case study that reveals the turmoil a CIO goes through when his budget is cut. While the case is fictitious, the issue it raises — having to do more with less — is very real. *Page 87*

The information revolution is over and we lost, says author Michael Schrage. We bet on the power of technology to boost productivity, but we forgot that it's really people — and how they interact — that makes the difference in running a business. *Page 33*

Outsourcing

Outsourcing vendors are eagerly watching the Justice Department's probe of charges that IBM's outsourcing business violates antitrust regulations. IBM's rivals continue a strong interest in the issue while relying on IBM for products. *Page 109*

An IBM outsourcing executive addresses charges that IBM is violating the 1956 Consent Decree. *Page 109*

Databases

Users of Microsoft's Access database should be wary when working with LAN Manager networks. *Page 4*

Informix Software plans to ship a multithreaded release of its OnLine relational database system, Informix 6.0, in the summer of 1993. Early beta-test sites said last week that Informix 6.0 runs much faster than earlier versions because it spreads the work load evenly in a multiprocessor system. *Page 4*

As Borland promoted its Integrated Database Application Programming Interface standard for desktop access to many database servers, it shipped a new version of InterBase with special links to Paradox desktop clients. *Page 4*

Marketplace

Negotiating tactics used by dirty dealers are exposed for what they really are — attempts to confuse and stall the buyer. *Page 100*

Document transfer

Adobe's Acrobat technology holds the promise of a greener world through a paperless office. *Page 41*

Groupware

Computer Associates plans a workgroup computing strategy without a 'workgroup' product. *Page 47*

Application development

Wrapping object-oriented code around aging procedural code may be a quick transition to client/server systems. Some users have used this technique to let a new generation of Unix workstations and PC applications browse data sources scattered throughout a corporate network. *Page 73*

A CASE integration standards effort is raising hackles among many U.S. participants. At stake, they say, is the future of the American CASE industry. *Page 73*

Software testing programs are the best way to cope with growing concerns about software quality in the United States. *Page 73*

Nip and tuck

HP AND IBM MINICOMPUTER USERS GIVE THE TWO VENDORS CLOSE SATISFACTION RATINGS IN THE KEY AREA OF OVERALL PERFORMANCE

SEE BUYERS' SCORECARD, PAGE 84

Product	Performance score
HP's 3000	8.8
IBM's AS/400	8.6
DG's MV Eclipse	7.7
DEC's VAX	7.7

MAXIMUM POSSIBLE SCORE: 10 RESPONSE BASE: 119 USERS

Security

Commercial users of the Internet, wary of security risks, block access to some capabilities and turn to encryption. *Page 55*

Enterprise networks

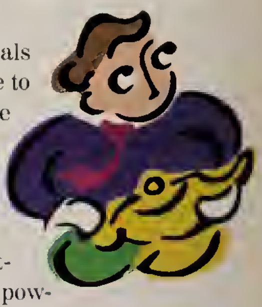
Routing SNA over LAN internetworks may become less problematic with recent introductions from leading router companies. *Page 7*

Sprint reveals a packet-based ISDN service. *Page 58*

Manufacturing

At Autofact earlier this month in Detroit, Microsoft's presentation of grand plans for Windows NT on the shop floor indicated how far manufacturers have come in embracing desktop platforms. *Page 49*

Careers



When we asked IS professionals what IS position they would like to try if given the chance to trade jobs for a day, the answers were split: a third said they wouldn't change at all; a third wanted to give upper management a try. The remainder wanted to swap spots for a day with a powerful industry leader such as Bill Gates. *Page 95*

If you entered the computer field because of a keen interest in technology but you aren't particularly interested in all of the administrative tasks required of a manager, there is a career path for you as a technical contributor. *Page 94*

PC hardware

Dell plans to introduce lower priced, redesigned PCs and notebooks and cut prices on its Dimension line. **6**

Apple moves to ensure data exchange capability between Newton and Hobbit PDAs. **44**

American Airlines boosts load-planning productivity with a smarter application. **39**

Just because ValuePoint has not stormed the world the way Prolinea did doesn't mean the new IBM is a dud. **39**

Midrange systems

DEC's ability to run multiple operating systems across Alpha gives it flexibility to target a range of markets. **67**

A basic upgrade to its IBM AS/400 and the addition of T1 lines are the cost-effective alternatives to a new platform for a Boston health group. **68**

PC software

Early adopters of graphical user interfaces found hidden costs run up the tab, but they said a move to a GUI was strategic. **12**

Embedded fonts in Microsoft's TrueType may help solve enterprisewide problems. **44**

Comdex wrap-up

The things you love to hate about Comdex. **41**

Several storage vendors touted RAID subsystems at Comdex/Fall '92. **24**

Unix

A reservation system running on an IBM RS/6000 cured the headache of scheduling many of the 2.7 million rounds of golf played in the Myrtle Beach, S.C., area each year. **47**

Although Unix is its declared new emphasis, Cognos is poised to feed the AS/400 development market with upgraded and new software-building tools. **16**

Syntax, Inc. is offering open systems networking software to link DOS, Unix, OS/2 and Macintosh-based workstations to Unix servers. **49**

Large system software

Carnegie Group improves its TestBench program, which lets field service workers better diagnose customer problems. **70**

Verity offers APIs for topic document retrieval. **67**

Metaphor, Inc. is branching out to support more industry-standard software with its decision-support system. **67**

Advanced technology

Once seen as the operating system of the future, Japan's TRON has found few homes in business. **28**

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TWO-PHASE COMMIT

SYBASE

ORACLE7

50 LINES OF COMPLEX CODE

7 LINES OF INDUSTRY STANDARD SQL

```
dbsqlexec ( dbproc_ server 2 );
/ *
}
/ *
my
DE
DE
co
{
```

```
two-phase()
{

/* open up two servers and a commit service */

   dbproc_server1 = dbopen(login, databasename1);
   dbproc_server2 = dbopen(login, databasename2);
   dbproc_commit = open_commit(login, NULL);

/*
** prepare data for each command buffer and select a database to
** use, then start distributed transaction on commit service
*/

   commid = start_xact(dbproc_commit, application, "my_xact", 2);

/*
** build transaction name and begin transactions on different
** servers
*/

   build_xact_string("","" commid, xact_string);
   dbfcmd(dbproc_server1, "BEGIN TRANSACTION %s",
   xact_string);
   dbsqlexec(dbproc_server1);
   dbfcmd(dbproc_server2, "BEGIN TRANSACTION %s",
   xact_string);
   dbsqlexec(dbproc_server2);

/* perform various updates and then.... */

/* if there is a failure on one abort all of them */

   if (return_code == FAIL)
   {
      abort_xact(dbproc_commit, commid);
      dbcmd(dbproc_server1, "ROLLBACK TRANSACTION");
      return_code = dbsqlexec(dbproc_server1);
      dbcmd(dbproc_server2, "ROLLBACK TRANSACTION");
      return_code = dbsqlexec(dbproc_server2);
      if (return_code != FAIL)
      {
         remove_xact(dbproc_commit, commid, 1);
      }

   dbexit();
   exit(ERREXIT);
   }

/* otherwise prepare to commit */
dbcmd ( dbproc_server 1, "PREPARE TRANSACTION");
dbsqlexec (dbproc_ server 1);
dbcmd (dbproc_ server 1);
dbcmd ( dbproc_server 2, "PREPARE TRANSACTION");
```

SYBASE code example from A Guide To SYBASE and SQL Server by D. McGoveran with C.J. Date.

```
UPDATE SAVINGS
SET S_BALANCE = S_BALANCE - 250.00
WHERE S_DEPOSITOR = 'JONES';

UPDATE CHECKING
SET C_BALANCE = C_BALANCE + 250.00
WHERE C_DEPOSITOR = 'JONES';

COMMIT WORK
```

These two programs do exactly the same thing: update related data on multiple servers. Oracle does it in 7 lines of Industry Standard SQL. Sybase requires 50 lines of complex C code. If productivity is important to you call 1-800-633-1073 Ext. 8187 for a free copy of "Client/ Server Database: Getting it Right" by programmer productivity expert Steve Schur.

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Informix chases DBMS rivals

Touts forthcoming multithreaded database with greater performance

By Jean S. Bozman
MENLO PARK, CALIF.

Informix Software, Inc. plans to counter the new databases from rivals Oracle Corp. and Sybase, Inc. next year with a multithreaded database targeted at high-end information systems shops. Early beta-test sites said last week that existing applications run much faster than they did under single-threaded Informix OnLine 5.0.

The new multithreaded database allows tasks such as user log-ons and complex queries to be evenly spread among multiple CPUs, making better use of resources.

Originally scheduled for shipment in early 1993, Informix OnLine 6.0 is now set to ship in about six months, Informix executives said last week. No reason was given for the delay of the rearchitected database.

However, Informix acknowledged that it added more features, some of which match features of Oracle 7, announced in June, and Sybase System 10, announced earlier this month.

Beta testers said Informix added several extra features, such as backup and recovery for mainframe-class processing and large database support.

Testing scheduled

Informix 6.0 will be shipped on four Unix platforms sometime during the summer of 1993, said Tim Shetler, vice president of product marketing, who manages Informix's database server and connectivity software. The first platforms will be Sequent Computer Systems, Inc., Sun Microsystems, Inc., Hewlett-Packard Co. and IBM RISC System/6000 machines, he said. The database will enter a formal beta test in February 1993, he added.

No price ranges were given for Informix 6.0, a rearchitected version of Informix OnLine. Future Informix OnLine releases — Informix 6.1 with a parallel data query (PDQ) option and Informix 7.0 with PDQ and support for loosely coupled multiprocessor systems — are due in the spring of 1994 and early 1995, respectively, Shetler said.

Attention grabber

For now, beta-test users are most interested in Informix 6.0's reportedly higher performance for Informix applications.

"We were really impressed by the performance," said Jon Vemo, database administrator at Electronic Transaction Corp., a Bothell, Wash.-based check-authorization service for retail merchants. "Parts of it were up to 10 times faster, and overall, it was 30% faster than Informix 4.1."

Vemo tested Informix 6.0 on a four-processor Sequent system with a 3G-byte database. His firm has a 20G-byte master database based on Informix 4.1 that allows retail merchants such as grocery stores to compare personal checks presented by their customers against a bad check list.

Another early site, AT&T Network Systems in Lisle, Ill., tested Informix 6.0 with a 20-million-row database table that supports a new 911 emergency telephone system. Building an index for the 4G-byte database, which runs on an eight-processor Sequent system, took a fraction of the planned time, said Mark Nelson, a member of AT&T's technical staff.

From days to minutes

"With Informix 4.1, it took days and days to build an index that large," Nelson said. "With Informix 5.0 it took hours, and now we're talking about minutes."

He attributed the speedup to the multithreading feature, which spreads the index work over eight Intel Corp. CPUs in the Sequent machine.

Industry analysts said Informix has to prove it can compete head-on with Oracle and Sybase for high-end IS applications.

Informix already had such key distributed relational database management system features as declarative referential integrity, stored procedures and two-phase commit, industry analysts said. With Informix 6.0's multithreaded architecture, it can match its rivals feature for feature.

Informix facts

Though Informix is the fourth-largest provider of RDBMSs in terms of license revenue, it is the second-largest player in the Unix segment, according to market researcher Dataquest, Inc.

The company posted Unix RDBMS revenue of $80.7 million last year, which accounted for 18% of that market segment.

The company's Unix RDBMS business is growing at a compound annual rate of 40%.

In comparison, market leader Oracle recorded $343.2 million in Unix RDBMS revenue last year, which accounted for 44.2% of the segment.

Database dominance

The open RDBMS market is firmly in the hands of the top four vendors

Open RDBMS companies
(Percent of license revenue)

RDBMS license market share	1990	1991	1992
Oracle	56%	54%	47%
Ingres	15%	15%	17%
Sybase	9%	11%	13%
Informix	10%	10%	12%
Interbase	4%	5%	5%
Unify	4%	4%	4%
Other	2%	1%	2%
Total revenue	1.004B	1.235B	1.547B

Source: Dataquest, Inc.

Borland ships non-IDAPI database link

By Jean S. Bozman
SCOTTS VALLEY, CALIF.

Even as Borland International, Inc. extolls the virtues of its Integrated Database Application Programming Interface (IDAPI) standard for client access to many database servers, it plans to ship a non-IDAPI link between its own Paradox desktop database and its InterBase relational database server by tomorrow.

The new Paradox SQL Link client/server software connects with InterBase 3.3, an enhanced release that supports Paradox DOS and Windows "requestors" that recently shipped. InterBase is generally used with Unix and Digital Equipment Corp. VAX computers, the firm said.

Bridging the PC and Unix worlds is a challenge for Borland as it moves to support open systems, analysts said.

"Borland wants to be sure there is a good client/server relationship between its clients, Paradox and dBase for Windows and its server," said Bill Higgs, vice president of software research at Computer Intelligence/Infocorp in Santa Clara, Calif.

Borland executives said they saw no marketing conflict in their shipment of the Paradox API and the all-purpose IDAPI.

"If you're going after a single database source, like InterBase, it can be an advantage to use the native API," acknowledged Bruce Linn, director of product management at Borland's InterBase business unit. "It's a tighter link."

That sort of connection, he said, can tap database-specific features such as InterBase's support for array data type or event-alerters.

Better for browsing

IDAPI, by contrast, is a better solution for enterprisewide data browsing or for ad hoc data queries, Linn said.

"If a given client wants to get at more than one database, InterBase and [Oracle Corp.'s] Oracle, for example, then the generic higher level IDAPI is ideal because it is designed to connect to different database sources with a single API," he explained. Paradox clients would use IDAPI to reach non-Borland databases, he added.

Paradox's SQL Link software module will "provide secure, transparent access from Paradox 4.0 to data on the InterBase server," according to Borland. Paradox SQL Link, a $395 module, requires the use of $795 Paradox 4.0.

The enhanced InterBase engine is available as a free upgrade for InterBase users who pay maintenance fees.

Interbase info

Interbase came from nowhere in 1988 to become the fifth-largest relational database system in terms of licensing revenue, according to Dataquest, Inc.

License revenue totaled $55.7 million last year, up 16% from the year-earlier period.

That equated to 4.6% of the overall relational database market on a license revenue basis. All revenue is derived from Unix systems.

Access and LAN Manager: a corrupting combination

By Christopher Lindquist
BELLEVUE, WASH.

Read those README files — that is the advice of Microsoft Corp. Access users who discovered that the additional on-line documentation for the new database contains a rather disturbing warning: Using Access with LAN Manager can lead to corrupted database files.

Both an independent consulting firm and Microsoft technical support confirmed that the problem exists but added that a patch, which is on the Open Database Connectivity disk supplied with Access, should take care of any problems. Reportedly, the patch can also be downloaded from CompuServe.

The bug in LAN Manager was discovered late in the testing process for Access, a Microsoft spokeswoman said. It affects all versions of LAN Manager after Version 1.0 and before Version 2.1a and could affect other networks that use an unchanged version of the LAN Manager redirector, such as Digital Equipment Corp.'s Pathworks. It will not affect Version 2.2 of LAN Manager, due to ship shortly, , Microsoft said.

The patch that Microsoft ships for LAN Manager with Access reportedly will prevent any problems, but at least one user said he was extremely concerned that such a new product should have such a potentially dangerous problem. "Why am I applying a hot fix to a brand new product?" asked the user, who wished to remain anonymous.

He added that while he has a programmer working with Access as a safety precaution, the Access workstation is not connected to his network. "It means that I definitely am not going to be connecting it to my production database," the user said.

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News Shorts

HP scores wins over IBM

Last week was a good one for Hewlett-Packard Co.'s ongoing rivalry with IBM in the multiuser computer business. First, Los Angeles-based Universal Software, Inc., which makes software for converting IBM System/36 machines to RISC System/6000 Unix platforms, said it will offer software for converting System/36 software to the HP 9000 Unix box. Then, the Transaction Processing Performance Council (TPC) said the HP 3000, which runs the MPE operating system, outperformed the Application System/400 in an on-line transaction processing test running the new TPC-C benchmark.

EDS buys outsourcing client

Electronic Data Systems Corp., long known for its equity-for-business strategy in outsourcing circles, last week took that approach to the limit when it acquired one of its outsourcing clients, Cummins Cash and Information Services. Neither company disclosed the acquisition price. Cummins, which provides card-based payment systems for truckers to purchase fuel and other goods and services, has been an EDS client since 1990. The acquisition brings some 1,900 trucking customers and 15,000 truck stops, banks and retail locations into the EDS fold.

Wang posts Q4, year-end losses

Wang Laboratories, Inc. posted an operating loss of $34 million for its fiscal fourth quarter, about 50% better than the $70 million reported for the same period last year. Sales slipped nearly 4%, from $492 million to $474 million, for the period. However, Wang's fourth-quarter net loss approached $334 million after restructuring charges and other unusual items associated with the company's Chapter 11 filing, such as selling off its PC unit and other overseas groups. For the year, Wang reported a net loss of $357 million on sales of $1.9 billion.

DEC management shakeup continues

Digital Equipment Corp. Chief Executive Officer Robert Palmer named Russell Gullotti vice president of the U.S. area last week. Gullotti replaces Don Zereski, who is now working in a different capacity at DEC under Vice President of Operations Jack Smith. One of Gullotti's first responsibilities will be to appoint a new senior U.S. sales/channels manager, who sources said is likely to come from outside DEC. Restructuring efforts elsewhere in the company are taking shape: Palmer is expected to announce managers for eight business units by the middle of next month.

SHORT TAKES **Micrografx, Inc.** President George Grayson has resigned. A company spokeswoman said Grayson has not announced future plans, nor has he indicated a reason for leaving. Grayson's brother, Chief Executive Officer J. Paul Grayson, will take over day-to-day operations of the company until a full-time president is hired. . . . The cellular phone industry announced its 10 millionth customer last week, reaching that landmark faster than any communications industry segment, according to the **Cellular Telephone Industry Association**. . . . **Micom Communications Corp.**'s Marathon 1K and 5K multiplexers will provide the cost benefits of data compression for IBM AS/400 hosts communicating via IBM's Advanced Program-to-Program Communications. The multiplexers support a combination of compressed voice, data, fax and fast-packet communications, the vendor said. . . . **Proteon, Inc.** has announced a driver that enables SCO Unix systems to make use of its ProNet-4/16 Token Ring local-area network family of adapters. Proteon also announced an adapter for the low-end XT/AT bus PC market that is priced at $495

News shorts, *page 16*

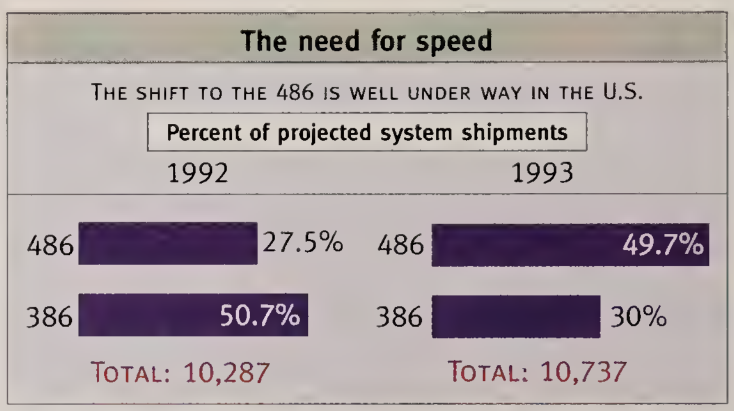
Dell to revamp entire product line

By Michael Fitzgerald

AUSTIN, TEXAS

Dell Computer Corp. will begin a complete overhaul of its product lines tomorrow, when it replaces its entire desktop and server lines, according to sources close to the firm.

The all-486-based product lines are expected to reinforce an industrywide trend away from the 386. Other major vendors, such as IBM, Compaq Computer Corp. and AST Research, Inc., have also shifted emphasis away from the 386. Systems vendors cite Intel Corp.'s aggressive pricing on the 486SX and 486DX and the need to run Microsoft Corp.'s Windows applications as reasons for the move.



Source: International Data Corp.

The shift to the 486, while driven by Intel, could cause supply problems for some vendors. Many vendors contacted said second-tier makers and those that have forecast poorly for 486 demand will have trouble getting extra midrange 486DX chips from Intel, in part because Intel's Albuquerque, N.M., fabrication plant is switching to new production lines.

While Andrew S. Grove, Intel's president and chief executive officer, said at Comdex/Fall '92 that "we are not limiting anybody's ability to ship [right now]," many sources said Intel is essentially on allocation for at least some 486 models.

Dell, Compaq and AST do not appear to be affected by this, but IBM's ValuePoint line will be, sources close to that company said. IBM officially denied this, but IBM PC Co. President Robert Corrigan said at a Comdex press briefing that IBM has been "notoriously bad about forecasting demand," suggesting that if demand outstrips IBM's expectations, customers could have to wait for high-end ValuePoints.

Dell's announcement, meanwhile, will help the firm stay competitive with IBM and Compaq, both of which refreshed their product lines more recently than Dell, users said.

"We're evaluating what we want to do with our systems and looking at several different vendors, and this will help Dell stay in the running," said a micro manager at a major Dell shop, who asked not to be identified.

Leonard Steinbach, assistant director of computing services at the SUNY Health Science Center in Brooklyn, N.Y., added, "I'm glad to see external cache availability, and I'm glad to see it's Pentium-upgradable. We don't know how fast or high the hardware/software spiral will spin, and I want to put the days of every-couple-of-years hardware upgrades behind us."

The first of the new lines has actually already hit the market — the recently announced Dell 333S/L, based on Intel's 33-MHz 80386SX (and Dell's last 386-based desktop). The 333S/L marks the first of the new L line, which will replace Dell's P series. Dell will also replace its D and DE lines with the M and ME product lines, sources said.

These products will feature local-bus graphics driven by a graphics accelerator from S3, Inc.; external cache for the processor; Pentium upgradability; and an easy-off, one-screw case design, used on the 333S/L. The sources said Dell will also ship its first non-Dimension tower built around the AT bus.

Dell is also expected to eliminate the Smartview LED it has used on its towers and servers and will use a low-insertion-force socket for upgrading, rather than the zero-insertion-force socket many vendors have adopted.

Dell refused to comment on any new products.

Analysts said the product refresh was welcome. Dell has "had phenomenal performance with an old, tired product line," said Kimball Brown, vice president at Computer Intelligence/Infocorp in Santa Clara, Calif.

Pricing for the new lines is expected to be $100 to $200 lower on average than current models, the sources said. Dell is also expected to cut prices on its low-end Dimension line this week.

Dell will revamp its notebook product line in the first quarter of 1993, the sources said. Details were sketchy, but Dell is expected to offer its first active-matrix color screen and update its design to incorporate more modularity.

Separately, sources said Dell will begin shipping a version of its 3½-pound 320SLi with a backlit screen before the end of the year.

Trading queries?

Dell invited a Securities and Exchange Commission (SEC) probe after Wall Street raised questions about the PC maker's accounting practices last week.

David Korus, a Kidder, Peabody & Co. analyst, said a two-month study of Dell's financial doings showed "unusual" ways of accounting for losses on foreign currency exchange rates.

Korus speculated in an investment briefing that Dell's record profits and sales for its fiscal third quarter may be the result, in part, of those methods and not Dell's products.

"False," Dell countered, asking the SEC to investigate its books.

The SEC also made an informal request, according to Dell, to see documents on last week's stock trades. Korus made the statements the day after Dell posted $28.6 million in profits for the quarter, compared with $13 million a year ago. Sales topped $570 million from $229 million [CW, Nov. 23].

After climbing $2 on that happy news, Dell stock dropped $3.75, to $34.63, in response to Korus' remarks, as 10 million shares changed hands. The stock was trading midweek at $35.50 a share.

Dell said there is no chance it will have to restate historical earnings and that future results will not shrink because of as-yet unrecognized foreign exchange losses.

The Austin, Texas-based company admitted to trading currency to generate a current-quarter profit but said it stopped the practice in July, restricting activity to hedging on overseas currency only. Most companies that do a lot of international business use currency trading as a hedge.

— *Kim S. Nash*

SNA over TCP/IP

Routers address lost SNA sessions

By Elisabeth Horwitt

BEDFORD, MASS.

Leading router vendors are starting to address a major downside to linking Systems Network Architecture (SNA) and local-area networks over the same router backbone: the tendency of IBM SNA sessions to get lost during traffic jams or glitches on the internetwork.

The vendors' basic approach to solving the problem is the same: Invest SNA traffic with the dynamic routability of Transmission Control Protocol/Internet Protocol (TCP/IP).

"These features are very critical" to companies that want to direct their SNA traffic over routing backbones but are not ready to make the big transition from traditional SNA to peer-to-peer protocols such as LU6.2 and IBM's Advanced Peer-to-Peer Networking, said Rick Villars, a director at International Data Corp. in Framingham, Mass. However, "the whole approach [of routing SNA over TCP/IP] can only go so far; you can only do so much [with a protocol such as traditional SNA], which was designed to be nonroutable," he added.

Keeping up

Wellfleet last week became the last of the major routing vendors to announce SNA over TCP/IP. This capability, coupled with the Open Shortest Path First routing protocol, allows a router to reroute transmissions around a downed line before SNA sessions are lost and minimize broadcast storms that plague source routing bridges.

Strategies detailed

Last week, several vendors detailed to *Computerworld* their strategies for addressing SNA routing issues:

- Wellfleet Communications, Inc. announced that its routers will support a traffic prioritization feature through which users can ensure that their SNA sessions are not lost because of insufficient bandwidth, the vendor said.

Users can set prioritizing filters according to a variety of criteria, including node address, protocol and application name, a Wellfleet spokeswoman said. The feature is available free of charge with Wellfleet software within 30 days, she added.

- Proteon, Inc. indicated that it will announce a similar capability — although not necessarily through prioritization — in the next couple of months.
- Cisco Systems, Inc. has been offering SNA prioritization for about a year now, a spokesman said. Cisco recently began shipping a feature that enables users to prioritize a particular type of SNA traffic, such as 3270 terminal or batch file transfer, the spokesman added.

Holiday Inn Worldwide has experienced SNA session loss on its Proteon internetworks during peak traffic times, when various applications were competing for bandwidth, said George Morales, network analyst at the Alpharetta, Ga., firm.

While devices using LAN protocols such as TCP/IP merely experienced delays at these times, SNA devices communicating via the IBM Synchronous Data Link Control protocol automatically terminated a session when they received no acknowledgment within a set period of time, he added.

Wellfleet also announced SNA/IP, which routes SNA over TCP/IP, coupled with a Directed Explorers feature that is said to minimize "broadcast storms" by directing SNA devices to the router nearest the host they want to access.

In a broadcast storm, the internetwork is congested by multiple SNA devices in search of a host.

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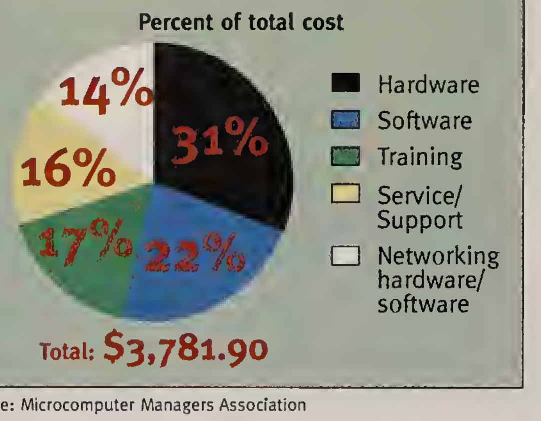
Survey uncovers hidden GUI costs

By Lynda Radosevich
NEW YORK

PC managers are discovering not only that the costs of upgrading users to a graphical user interface (GUI) are high but that the benefits are difficult to measure. Still, most say that moving to a graphical platform is a strategic move, according to a recent survey conducted by *Computerworld* for the Microcomputer Managers Association (MMA).

Bottom line

400 microcomputer managers estimated the average cost per unit of migrating to a graphical user interface as follows:



Source: Microcomputer Managers Association

The majority of the 400 managers surveyed found the average cost per PC of upgrading to a GUI is about $3,800. The most obvious costs are hardware and software upgrades, which averaged $1,200 and $800, respectively (see chart). However, it is the less obvious costs — training and extra support staff — that jack up the price.

For example, Theresa Doyle, vice president of computer and information services in the equity research department at Dean Witter Reynolds, Inc. in New York, found that training was the most expensive part of upgrading her department to Microsoft Corp.'s Windows 3.1 from DOS. Because she leases the department's 120 Intel Corp. 80386- and I486-based PCs, she has no hardware upgrade costs.

To bring users up to speed quickly, Doyle devised a five-day, 2½ hours per day course to teach 120 employees how to use Windows, Word and Excel. The course cost the firm $25,000.

"GUI is supposed to be easy, but it is different than what people used before," Doyle said. "If you don't train people, I believe you are wasting the investment in GUI." Vendors such as Microsoft commonly tout GUI as making computing intuitive and easy to learn.

Tom Howker, a systems team leader at the Maine Bureau of Taxation in Augusta, has spent the past six months upgrading 310 employees from dumb terminals to IBM's OS/2 2.0-based PCs. Training was a bigger cost than hardware, he said, because on top of learning a GUI, users had to learn how to use PCs. "They had keyboard fright, disk drive fright. People wanted to know, 'How do I turn this thing on or off?' " he said. "When you add in the individuals' nonproductive time spent learning the new systems at their desktop, it is a very big expense."

Although managers cite benefits from moving to a GUI, which range from ease-of-use to multitasking capabilities, most said they were moving to a GUI because they see it as a strategic platform, not because they can quantify cost/benefits.

"In general, people feel the handwriting is on the wall, and they must do it to remain competitive," said Priscilla Tate, executive director of the MMA in New York. She said one reason companies see GUIs as strategic is because software vendors are focusing their development efforts for new strategic applications on GUI platforms.

Jeff Szabla, a network administrator at Liberty Diversified Industries in Minneapolis, is migrating users to 486-based PCs running Windows 3.1 as part of a broader company plan to downsize from an IBM 4381 mainframe. "I can't justify the costs [of upgrading users' PCs] to the head accountant," he said. "I have to find people with needs that can be met by graphical applications and get them to use the applications. Then when they complain that their computers run too slowly, I can justify upgrading their computers."

Of the 400 survey respondents, more than 15% run a GUI as the predominant platform and 40% plan to within 12 months. Windows owned the lion's share of the GUI interest, trailed by Apple Computer, Inc.'s Macintosh, OS/2 and Unix.

IBM bolsters client/server

CONTINUED FROM PAGE 1

ground," said John Stevenson, vice president of MIS at Dr. Pepper Co./Seven-Up Cos. in Dallas. "This is very, very new to them."

"We will look at IBM and other suppliers as we continue to put more applications onto PC local-area networks," added Marvin Ehlers, vice president of MIS at Natural Gas Pipeline Co. in Lombard, Ill. "We look for cost, reliability and performance."

For example, although some 75% of the company's 1,300 PCs are from IBM, the energy concern is also using Novell, Inc. networking products and a database management system from Sybase, Inc.

Heading up the client/server group is Thomas E. Furey Jr., former assistant general manager in the Programming Systems line of business and manager of IBM's Santa Teresa, Calif., laboratory. Approximately 500 of the programmers assigned to the client/server unit will continue to work on the VM operating system — historically Endicott's main development effort — and will be tapped to do client/server projects as necessary.

Programmers from other IBM lines of business, including Personal Systems and Networking Systems, will be added over time as customer demands warrant, Clague said.

Forcing the issue

At issue is just how much the entrenched IBM sales organization will actually use the new client/server group instead of continuing to sell big iron.

"Furey will need to be a good politician," said Frank Dzubeck, president of Communications Network Architects, Inc., a consulting firm in Washington, D.C. "Some trading areas [IBM sales organizations] with large installed bases of mainframes will have to be made to do it. My concern is whether they will follow through. We'll see over the next couple of months."

Dzubeck added that the client/server group also fills the role of "repositioning" the Endicott laboratory. "One eases people into something else instead of having to obsolete them," he said.

"Can they do it? Sure. Will they successfully do it? They need to, or else they'll be in deep trouble," added Amy Wohl, president of Bala Cynwyd, Pa.-based consultancy Wohl Associates. "That's a powerful incentive to succeed. But it's one thing to wave the magic wand around and say, 'Pay attention to what we're doing in the client/server field'; it's another to actually be a successful client/server vendor," she said. "IBM isn't what most customers have in mind when they talk client/server."

In fact, some customers actively ignore IBM as a purveyor of client/server goods.

"We hadn't thought of IBM in this context," said Doug Underhill, vice president at CSX Technologies in Jacksonville, Fla. "Client/server should be simpler and not require as much vendor involvement as the traditional mainframe. We're trying to avoid transferring the IBM bureaucracy into a smaller platform," he added.

Ehlers added, "The client/server group may help IBM, but it will be incremental help. It's not really a deciding factor."

If you're waiting for client/server technology to progress before investing, Forrester Research, Inc.'s John McCarthy said companies should start addressing the training, organizational and budgeting issues now. Early implementors have found that these issues can be more of a problem than the technology itself.

Page exits Software AG

By Gary H. Anthes
RESTON, VA.

Peter Page, a top executive and product visionary at Software AG of Germany, parent of the U.S. subsidiary, resigned unexpectedly last week.

Michael J. King, president and chief executive officer of the North American operation, would not comment on reports that Page resigned over differences with company founder and co-leader Peter Schnell. "Peter [Page] concluded it was time for him to resign and move on to other things," King said.

King said Software AG of North America, Inc. works independently of its German parent except in developing product strategy, where headquarters in Darmstadt takes its cues from the all-important U.S. market. "We lead in that we set the broad direction for products," he said.

"There will be no change at all in our strategy and direction as a result of Peter leaving," he added.

Other observers were not so sure. "It's never transparent or insignificant when the founder of a long-term and successful company leaves," said Peter Kastner, vice president at Boston-based Aberdeen Group. "To say there will be no ripple in the water is specious."

Software AG's *Peter Page decided it was time to move on*

Page was the original developer of Natural, a fourth-generation language and one of the company's two flagship products. The other cornerstone of the company's line of 100-plus products is the Adabas database management system, which Schnell developed.

"For a long time, there has been a Peter Schnell camp and a Peter Page camp," a source close to the company said. "You either joined one or the other, but you didn't join both."

Robert Tasker, a vice president at International Data Corp. in Framingham, Mass., said both Schnell and Page were "extremely good technically" but that Page had a better sense of where the market was going. He gave Page most of the credit for starting the old-line mainframe company on the road to open systems and client/server.

"I think what happened was a differing as to where to apply the company's resources," said Tasker, who consulted with Software AG management in the U.S. and Germany earlier this year.

But he said Page's departure will not cause Software AG to retreat to the glasshouse. "Page was able to bring in a second tier of extremely good managers and sound technologists, so I think you'll not see much change. There is now less reliance on what either of the two Peters do."

At present, King said, there is no plan to replace Page.

Software AG has been profitable every year since its founding in 1969. Last year, the company earned $27 million on sales of $475 million, with $112 million flowing through its North American subsidiary.

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AT&T sells bandwidth choice

By Lynda Radosevich

BASKING RIDGE, N.J.

AT&T last week unveiled dedicated digital services that will give users private-line bandwidth options between the 1.5M bit/sec. and 45M bit/sec. speeds currently available with T1 and T3 services.

The services were designed for emerging bandwidth-hungry applications such as interconnections between local-area networks, imaging and multimedia, AT&T said.

Called Accunet Fractional T45, the services will offer data transmission speeds of 4.6M, 6.2M, 7.7M and 10.8M bit/sec. and will provide an alternative to high-speed switched services such as Switched Multimegabit Data Service (SMDS), fast-packet technology such as Asynchronous Transfer Mode and frame relay.

"This shows that AT&T is trying to maintain growth in the private-line service in light of advanced switched services such as SMDS and even frame relay," said Caroline Michel, a senior analyst for the carrier service program at International Data Corp. in Framingham, Mass. "While we're seeing migration to switched services, some users still like private-line services, which offer them better control over their data transmissions."

David Yedwab, vice president at Eastern Management Group, telecommunications consultants in Parsippany, N.J., said the private-line solution is better for point-to-point or one-to-many applications — such as sending long database files. High-speed switched services are more suited for many-to-many applications connectivity transmission with infrequent needs for connectivity.

"Having something in between [T1 and T3] does meet a number of requirements, such as LAN connectivity, where 1.5M bit/sec. doesn't provide enough speed, but there is no need yet for full-time 45M bit/sec. capability," he said. However, users will have to weigh the benefits of always having a line available against the costs, which can be higher than switched services if users have low or inconsistent volumes of traffic, Yedwab said.

Currently, users who require more than 1.5M bit/sec. can purchase multiple T1 circuits that are maintained separately. With Fractional T45, the service is managed as one unit, providing faster restoration in the event of errors and eliminating transmission delays, AT&T said.

AT&T rival Sprint Corp. plans to provide a fractional T3 service but does not see a demand for it yet, according to Mark Kaish, director of data marketing. He said Sprint will likely offer the service in late 1993 or early 1994. The other main long-distance carrier, MCI Communications Corp., said it does not offer a fractional T3 service.

AT&T said it plans to begin beta testing next month and will introduce Fractional T45 services in early 1993.

Corrections

- An item in the Nov. 9 issue incorrectly said Texas Instruments, Inc. set up Integrated CASE Environment Services, a consulting unit to help users deploy TI's application development tools. In fact, the unit is part of Ceridian Corp. in Greenwich, Conn.
- A product brief in the Nov. 9 issue on Megaware, Inc.'s VAX/VMS utility omitted the company's phone number. That number is (800) 538-6342.
- McData Corp.'s LinkMaster 6200 Network Gateway does not off-load 100% of Transmission Control Protocol/Internet Protocol applications and protocols, as stated in the Nov. 2 issue; the Linkmaster 6100 Network Server does.
- Technocron Software Systems is in Palo Alto, Calif. Its location was incorrectly stated in the Nov. 2 issue.

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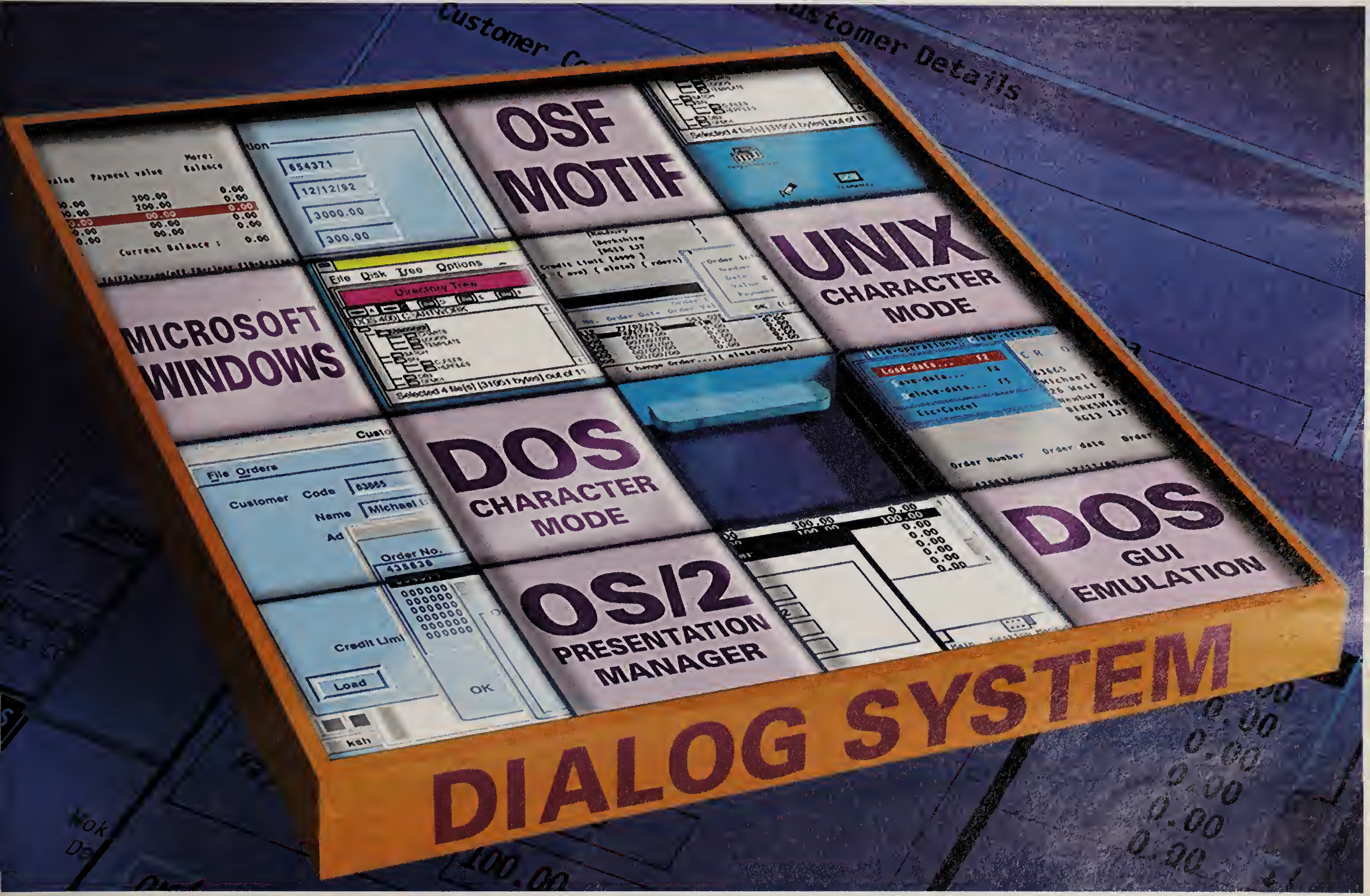

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Study cites successful IS project patterns

By Thomas Hoffman
NEW YORK

Companies successfully completing information systems projects that help transform their industries tend to follow similar patterns of behavior during their project's life cycle.

That is the finding of a recently completed Harvard Business School study. Consultants involved with the study said they believe that by modeling these patterns, other user companies may be able to successfully follow suit.

The results of the study, which were introduced last week at New York University's Stern School of Management, were based on five case studies conducted during the past four years, according to Frederic G. Withington, a member of the Harvard Business School advisory board and a 35-year IS veteran who worked on the report.

The study examined five leading-edge applications that were developed during the past 40 years by BankAmerica Corp., American Airlines, Frito-Lay, Inc., American Hospital Supply and the United Services Automobile Association (USAA).

In each case, a similar cascade of events took place, along with similar patterns of professional behavior, according to Withington.

For example, when BankAmerica began developing the first electronic check-processing systems in the early 1950s, it was reacting to soaring manual check-processing requirements facing the banking industry.

Thirty years later, Frito-Lay attacked an industrywide problem of controlling escalating distribution costs when it began developing a quantitative database. In both cases, the companies overcame their problems using similar IS development techniques.

Visionary and bean counter

According to Withington, the chief executive officers involved orchestrated control over the research and development of the projects and recruited the IS executives who would direct it. In each case, Withington said, the CEO adapted his company's organization to the potential of information technology.

"You need a CEO who is both a visionary and a bean counter," Withington said.

Each IS executive, the study revealed, was a "technology entrepreneur" who adapted to change during the course of the projects. The IS chiefs all met their targeted deadlines and were able to produce early, profitable results, Withington said.

Each IS chief was a "facilitator of organizational change, a leader of technologists and a creator of the planning process," Withington said.

Industry pundits added their own revelations. Howard Anderson, president of The Yankee Group, a Boston-based consultancy, noted how American Airlines (which developed the Sabre electronic airline reservation system) and USAA (which developed one of the first integrated image processing systems) were able to divide their respective projects into small, manageable parts. Anderson said these examples echo the importance of a solid organizational structure.

"Successful companies have an internal discipline that makes projects successful and identifies runaway projects early," Anderson said.

However, not all of the projects resulted in a competitive advantage for the companies involved, Withington noted.

For example, he said American Hospital Supply did not gain a competitive advantage from the Burroughs Corp. mainframe-based inventory management system it developed in the late 1960s because the company was later acquired by Baxter Healthcare Corp. and migrated to an IBM mainframe environment.

Evolution of a dominant design

Dominant systems are usually the result of responses to a business crisis, according to a recent Harvard Business School study. A state-of-the-art design typically exhibits the following qualities: provides significant cost reduction, offers superior service, supports new business functions and delivers better data both within the company and to suppliers and customers.

Users wary of encrypted software keys

CONTINUED FROM PAGE 1

programs, said CA is requiring users to adopt encrypted keys to run IDMS upgrades currently slated for April 1993 delivery.

"From our perspective, there's no business requirement for these keys," Morgan said.

Mark A. Combs, senior vice president of research and development at CA, said he was unfamiliar with the example Morgan noted but said the encrypted keys help CA track how its software is being used on CPUs for billing purposes.

Combs said the keys also enable CA to better support and maintain its software by tracking the physical location of the code. And, he said, the keys should help CA cut down on fraudulent use of its software. CA's senior vice president of planning, Sanjay Kumar, has estimated that 15% of all CA products on the market are used illegally.

Keeping law and order

SAS began providing the keys with its software in 1978 to harness those users who were unlawfully switching SAS software to unlicensed CPUs, according to James Goodnight, SAS president . The first year after their implementation, Goodnight said, the keys helped bring in an additional $500,000 in revenue. "If it's done properly, it's very useful," he said.

"We administer [the keys] very kindly and gently. We don't use it as a weapon," he added.

While some users said they fear the keys could be used to shut down their software, vendors said that is impossible. However, other users were concerned their vendors might withhold upgraded keys during contract renewals for licenses.

Occidental Petroleum Corp. in Tulsa, Okla., is in a contract dispute with CA over its recent consolidation of three data centers into one. Edward Barrows, director of the corporate data center, accused CA of poor record-keeping and said, "Until we know for sure that their records are correct, I'm not installing any of the CA products with locks in them."

Combs said CA is trying to smooth out past administrative bungles. "We have had record-keeping problems in the past, there's no doubt about that," he said. CA invested in new administrative systems two years ago, which have improved its record-keeping, he added.

"We don't use it as a way of twisting customers' arms. If they don't pay, they don't get the new release," said Paul E. Newton, president and chief executive officer at Boole & Babbage in Sunnyvale, Calif.

Several users who have used encrypted keys in their software said they have had no problems. Darrell Richardson, an administrator in the data services division of the state of Oklahoma's Department of Transportation, said the department has been using encrypted keys for 10 SAS products for the past few years with no disruptions.

Bob Wint, a technical support manager at Kelly Services, Inc. in Troy, Mich., also said he has had no problems with encrypted keys his company has used to run software from Goal Systems International, Inc. (now part of Legent Corp.) and Comshare, Inc.

One large systems user said vendors' deployment of encrypted keys makes sense to him. "If someone were to tell me they were uncomfortable having encrypted keys in their software, I'd have to wonder if they were using their software legally," noted Stanley Zemka, database administrator at Equitable Resources, Inc., a gas transportation and services firm in Pittsburgh.

Rob Schafer, program director at Meta Group, Inc., a Westport, Conn., market research firm, said encryption keys offer users certain benefits, such as improved service and more accurate license administration. But, Schafer said the inclusion of encrypted code is so disconcerting to some users that the potential for software shutdown often outweighs the benefits.

Senior correspondent Gary H. Anthes contributed to this report.

Mega health care merger

FDC to acquire Gerber Alley

By Ellis Booker
CHARLOTTE, N.C.

In the year's largest merger in the health care information systems business, First Data Corp.'s (FDC) Health Systems Group last week said it was acquiring privately held Gerber Alley, providing a ready-made entry into the European market.

Terms of the deal were not disclosed, and the merger requires the approval of FDC's shareholders.

But industry observers speculated that FDC paid one-time revenue for the Atlanta-based health care IS company. Gerber Alley reported revenue of $78 million last year.

Analysts, meanwhile, said the merger made sense because it combined Gerber Alley's strength in large hospitals with FDC's target market of small to midsize institutions.

They added that FDC will benefit from Gerber Alley's international operations.

"We didn't have an international arm, and this gives us entry into these markets," an FDC spokeswoman said.

If approved, the merger will also result in one of the largest health care systems providers in the industry, with more than 700 hospital clients and roughly 1,000 employees total.

Rumor mill

Peter Strombom, vice president of IS at Meriter Hospital in Madison, Wis., said he was not surprised Gerber Alley had agreed to be acquired. "There have been rumors out there for a good 10 months," he said, adding the company was not secretive about its need for cash.

Strombom said he was not concerned about continued support for his hospital's Gerber Alley systems, which it has used for three years.

The acquisition of Gerber Alley is the second significant purchase for the FDC unit.

In April 1989, as part of American Express Co.'s Information Services Corp. (ISC), it acquired McDonnell Douglas Health Systems Co. in St. Louis.

This April, American Express spun off ISC and renamed it FDC. American Express owns 54% of FDC, which had revenue of more than $1 billion last year.

Gerber Alley's product, The Precision Alternative, will become the company's turnkey solution for mid- to large-size hospitals.

FDC's Health Systems Group will continue to offer its current line of turnkey products as well as outsourcing services.

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DHL revamps with Big Blue

CONTINUED FROM PAGE 1

DHL's Unix installation was neither robust nor cost-effective enough to support the highly strategic applications the package handler is now launching against its competitors in the U.S. market, according to Michael Lanier, the unit's chief information officer.

The move is also seen as the best shot for DHL Worldwide Express' Western Hemisphere Division to catch up with its U.S. competitors in key strategic areas such as customer service and package tracking.

"The system was down 65.5% of the time when I got here," Lanier explained. Furthermore, a disparate mix of legacy systems lacked the integration needed to provide telemarketers and customer service representatives the data they needed instantaneously, Lanier said.

Now, with two applications that have been in production for several months, uptime clocks in at 99%, Lanier said. The telemarketing application has increased user productivity by 130%, primarily because telemarketers are spending most of their time dealing with customers rather than looking up key account information, he said. And next year, DHL plans to launch its first automated package-tracking application.

DHL, a privately owned, Europe-based company that only recently began focusing on the U.S. market, has long lagged behind U.S. market leaders Federal Express Corp. and United Parcel Service, Inc. in market share and key applications such as package tracking.

"Both Fedex and UPS are integrated operators — they operate their own pickup and delivery air fleet," said Jim Eckler, a partner at KPMG Peat Marwick's transport group. "DHL has some partially integrated delivery but not as much, which is all the more reason why it needs a state-of-the-art package tracking and handling system linked to a database" that can tell customers exactly where their packages are, Eckler said.

As for the expected bottom-line costs of this strategy, DHL paid an extra $5 million in capital costs in 1991 and expects to pay $10 million more this year, Lanier said (see box at left). Those figures cover the cost of designing the platform, beginning implementation and putting the first two applications into production, he added.

The company expects to pay about $15 million next year to complete the migration to the new system and launch several more key applications, such as package tracking and field systems, after which the yearly costs of the project should begin falling, Lanier said.

When Lanier was hired two years ago to re-engineer DHL Worldwide's information systems organization and systems, he quickly ascertained that the then-current Unix installation would never cut it.

"We took no umbrage with Unix — only with the timing" of migrating corporate operations to Unix six years ago, Lanier said. "Now the move makes sense, although some products are still immature, and the Unix industry still lacks adequate file backup and recovery."

Thus the decision to bring in IBM as co-developer, Lanier said.

"I don't think the word outsourcing does the relationship with IBM justice," Lanier said. "It really is a value-added partnership in which we work side by side."

Lanier said he made a conscious decision not to strike an outsourcing deal with IBM's Integrated Systems Solutions Corp. "We didn't want to turn the keys of the kingdom [over] to a company that doesn't know our business," he said. "IBM isn't running our computers." However, DHL and IBM are still discussing the possibility of IBM's taking over the monitoring and managing of the package handler's network.

IBM is DHL's weapon against the infamous hidden support costs of distributed networked systems, Lanier said.

To support the new platform in-house, he estimated that DHL would have paid IBM an additional $100,000 per support person per year "in order to provide multivendor database, operating system, network and application expertise." DHL would also have had to increase its support staff by 20% to 25% per year. "For every new system we put in place, we anticipated having to hire four to six new people."

Instead, each day, DHL has access to an average of three IBM branch managers on site and 15 IBMers in total for help with implementation, troubleshooting, answering questions, recommending enhancements and calling vendors together to figure out which is responsible for a system glitch.

Lanier estimated that providing support through IBM will cost roughly one-third of the estimated yearly capital costs of designing, developing and implementing the new distributed architecture.

The architecture is now firmly established at DHL — indeed, parent DHL Worldwide recently adopted an architecture that is "the mirror image of what we have here," Lanier said.

DHL's system

Servers: IBM RS/6000s, legacy systems from 11 manufacturers including NCR Corp., Stratus Computer, Inc., Pyramid Technology Corp., Prime Computer, Inc., HP, DEC.

Repository: IBM ES/9000

Clients: Apple Computer, Inc. System 7.0, OS/2, Windows

Networking: IBM Token Ring, Novell, Inc. NetWare, and TCP/IP, Open Systems Interconnect and IBM LU6.2 protocols.

Integration software: Peerlogic, Inc.'s Pipes

Capital costs: $5 million in 1991, $10 million in 1992, $15 million predicted for 1993, with costs decreasing thereafter.

DHL CIO Michael Lanier hopes that by 1994 his staff will number 155 — the head count in 1990. Last summer, IS numbers hit a high of 225. Typical support costs for a 5,000-user LAN internetwork total $6.4 million annually, compared with $2.3 million for a comparable SNA network, said a Forrester Research, Inc. report.

Picking Big Blue

IBM won the DHL contract against a bevy of Unix and communications-oriented vendors primarily because it was the only candidate willing to "go that extra yard," CIO Michael Lanier said. This translates into:

- **On-site support:** Typically, three IBM branch managers are on site at any given time, working alongside DHL technicians. When a problem develops, IBM acts as a liaison between DHL and multiple finger-pointing vendors.
- **Access to IBM's RS/6000 laboratory:** This includes early access to unreleased IBM products in the RS/6000 and AIX arena, including the NetView/6000 network management system.
- **Contract flexibility:** IBM offered initial technical services without pay and worked without a formal contract until October, when an interim contract was signed, Lanier said. The final contract is pending final approval for 1993.

IBM may recommend its own products, but the contract stipulates support for non-IBM products, Lanier said. "We have Hewlett-Packard Co. systems in Canada, Digital Equipment Corp. in New Mexico."

—*Elisabeth Horwitt*

Seeking competitive advantage

DHL cannot afford to play catch-up with Fedex and UPS when it comes to fielding package tracking and handling systems.

Instead, DHL intends to implement its competing applications on a client/server platform at a lower cost and with higher availability than its competitors can provide on their primarily mainframe-based systems, CIO Michael Lanier said.

Indeed, both UPS and Fedex have recently begun implementing major enhancements to their systems. UPS is in the process of equipping its delivery trucks with laptops so drivers can report package whereabouts via cellular links throughout the day. Fedex recently launched a major revamp of its mainframe package-tracking system [CW, Nov. 23].

However, Fedex and UPS must pay a high price for their systems, which are both mainframe-based, Lanier maintained. This centralized architecture levies high costs in the dedicated lines that are used to pass package arrival data out to customer service centers, he added.

It also forces DHL's rivals to pay high costs in redundant mainframe power to avoid having their packages marooned during a system failure, Lanier said.

In contrast, DHL's package-tracking system, now awaiting 1993 budget approval, consists of multiple IBM RS/6000s on Token Ring local-area networks, with each LAN serving a customer region. Checkpoints at airports and other delivery points notify the centers only when a package is late, minimizing network traffic, Lanier said.

As insurance against failure, multiple servers on the same ring can share the same information, and an Enterprise System/9000 repository is regularly updated with package data in case an entire ring goes down, Lanier said.

A UPS spokeswoman said UPS avoids the risk of a system failure's downing its package-handling operations by maintaining a hot backup data center. She questioned how DHL will be able to match UPS' near-instantaneous response time to customer queries on package whereabouts, particularly if the requested data resides on several servers. —*Elisabeth Horwitt*

Escrow counts

DHL CIO Michael Lanier was well aware of the perils of dealing with young vendors that tend to come and go like rockets in such volatile, new markets as distributed networked systems. DHL needed some of the capabilities promised by these vendors but could not chance losing support for a product if a firm went belly up.

Lanier's solution to the problem: ask certain companies to either provide the source code to their products or put it in escrow to be made available to DHL upon the vendor's demise.

"There was a vendor of a telemarketing software package that our users really liked, but the vendor would not agree to do one or the other" of the above options, Lanier said. Regretfully, DHL declined to use that vendor.

If the package is unique enough, DHL will waive the requirement, Lanier said.

Sequoia users staying put

By Melinda-Carol Ballou

MARLBORO, MASS.

Despite persisting financial difficulties, Sequoia Systems, Inc. users remain loyal to the fault-tolerant computer maker — for now.

Earlier this month, the company announced a loss of $9.16 million on revenue of $9.9 million for its first fiscal quarter of 1992. It is desperately seeking sources of capital [CW, Nov. 23].

Sources said Hewlett-Packard Co. and Sequoia held talks last week in which the companies discussed: the purchase of an additional 10% of Sequoia stock by HP, which currently holds 8%; guarantees of ongoing support by HP for Sequoia products if the latter should fail; and a speeding-up of sales orders for Sequoia from HP. Such an infusion of cash and support guarantees may be essential for Sequoia's ongoing viability.

"Sequoia will bite the dust unless HP [or someone else] is willing to bail them out," said Steve Widen, a senior analyst at WorkGroup Technologies, Inc., a market research firm based in Hampton, N.H.

A Sequoia spokesman said the company is talking with all of its partners — which include Samsung Electronics Co. and Toshiba Corp. in addition to HP — to determine what they might be able to provide, whether it be "financial support, equity investments or joint funding of projects." He said any decisions must be made within a "few weeks."

Sequoia is facing lawsuits from shareholders as a result of having twice restated its fiscal results, and a third restatement is due out shortly. Sequoia said it counted revenue from contracts for which payment was never received.

Last week, Ultimate Corp., a Sequoia distributor, also filed suit against the company, stating that Sequoia violated contractual obligations.

Industry analysts said, however, that such lawsuits are not uncommon and alone would be unlikely to deter HP from propping up Sequoia.

Mum's the word

Officials at HP refused to comment on such negotiations and said they are continuing to work together with Sequoia on a "next generation" of fault-tolerant computers based on HP's Precision Architecture-RISC platform.

However, HP can now hedge its bets because Sequoia competitor Stratus Computer, Inc. has also committed to building fault-tolerant computers based on HP's PA-RISC.

The company's financial difficulties stem only in part from misstatements of revenue for the fiscal year ended June 27. During the past few quarters, Sequoia has not had the safety net of a large, cushioning backlog of sales orders, Widen said.

It will be increasingly difficult for Sequoia to make a convincing sales and marketing effort amid an ongoing reorganization, which has already pushed Chief Executive Officer Gabriel Fusco out the door as well as 19% of the firm's former 380-person work force, he added.

Customers who have made large investments are rooting for Sequoia to pull through but must also consider other options. KHP Services, Inc., a health maintenance organization and subsidiary of Pennsylvania Blue Shield based in Camp Hill, Pa., invested $5.5 million in Sequoia systems and has 50 people trained to use them, said MIS director Robert Sweigert.

"We want them to survive, but as MIS director, I have to be prepared to move to other platforms" in case they don't make it, Sweigert added.

Other users were more confident of Sequoia's ability to ride out the storm — with the help of HP.

"This situation hasn't affected our purchase plans at all," said DeMarquis Walls, vice president of systems and technologies at Damark International, Inc., a catalog mail order company based in Minneapolis that shifted from Stratus to Sequoia platforms a few years ago.

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(Without taking a political stand - users *will* change a system they perceive as failing to deliver sufficient value.)

News Shorts

IBM to build bus for clone maker

The IBM PC Co. said it will build the AnyBus local-bus motherboard under contract with CMS Enhancements, Inc., an Irvine, Calif.-based maker of computer accessories. The AnyBus is a highly upgradable bus that will let users upgrade from either Intel Corp. I486 or IBM 486SLC processors to a next-generation chip. The products are available now and will initially be featured in systems from Princeton, N.J.-based Lexar Systems.

Windows software sales surge

Desktop application software sales hit the $1.4 billion mark in the third quarter, marking an 11% increase from the third quarter last year, the Software Publishers Association reported last week. Sales of Microsoft Corp. MS-DOS-based applications were down to $644 million, although they still make up the largest chunk of desktop program sales. While DOS application sales have been slipping, Microsoft Windows applications are soaring. Windows applications represented $487 million in sales last quarter, a 91% increase over third-quarter 1991.

Banyan offers upgrade price break

Banyan Systems, Inc. in Westboro, Mass., has announced a new "More for Less" incentive program that will allow users to buy the 1993 release of its Vines local-area network operating system at 1992 prices. End users who purchase a currently shipping version of Vines (4.10, 4.11 or 5.0) for delivery before Dec. 31 will receive the next 1993 Vines revision at no extra cost.

Hayes settles patent suit

Hayes Microcomputer Products, Inc. and Packard-Bell Electronics, Inc. signed a truce last week on a legal fight over patent infringement. The dispute was the most recent litigious skirmish in a line of suits stemming back to 1985, when Hayes received a patent for its escape sequence with guard time device, and modem makers sued to invalidate Hayes' license. Hayes said it won or settled most of the earlier suits for a cumulative $10 million. According to Hayes, Packard-Bell agreed not to manufacture modems that infringe on its escape sequence patent. Hayes said that in the past, the licensing battles have not raised prices for modem buyers.

Shiva offers dial-in servers

Shiva Corp. last week began shipping servers, called LANRover/E, that let remote users dial into corporate Novell, Inc. NetWare and AppleTalk networks and use LAN resources. Additionally, LANRover/E for AppleTalk will be bundled with Magnet, a Macintosh file management program from No Hands Software. The company's four- and eight-port servers have a suggested retail price of $1,999 and $2,999, respectively.

SHORT TAKES **Apple Computer, Inc.** has announced it is shipping the Data Access Language (DAL) server for IBM's Application System/400 family of midrange computers. The package starts at $4,250 but will be discounted by 25% for orders placed before March 31, 1993. ... **IBM** recently made 4% to 11% price reductions on Personal System/2 Server 85 and 95 lines. A top-shelf PS/2 95 now sells for $13,060. ... **Novell, Inc.** said last week that it received a U.S. patent for the fault-tolerant computer system technology used in NetWare SFT III, which allows a second network server to transparently take over if the main server goes down. ... **Toshiba America Information Systems, Inc.** established a TechEquity Trade Up Program to let businesses trade in used micros for Toshiba portables. Any purchaser of more than five Toshiba portables will receive cash back for trading in old systems. ... **U.S. Robotics, Inc.** cut prices by $200 for its entire V.32 bis product line. Prices now range from $645 to $795.

UK investors to buy Atex

Publishing systems firm says sale will not impact support

By Kim S. Nash
BILLERICA, MASS.

The English sure don't hold a grudge. While Harrod's, the king of London department stores, celebrates an American Christmas, a band of UK-based investors appears to have latched onto a similar theme. They announced plans last week to buy the Atex, Inc. publishing arm of Eastman Kodak Co. in a deal estimated at $10 million to $20 million.

Daniel Chapchal, a publishing executive known in Europe as a turnaround specialist, is poised to assume the role of chief executive officer at Atex when the deal is approved. That is expected to happen within 30 days.

Layoffs in the form of a 10% reduction of the 370-member Atex work force are "certainly possible," a spokesman said.

Miracle worker

Chapchal will replace Atex President and CEO Brian Lacey. Chapchal has made a career of turning around unprofitable companies, including printing firm Xenotron Holdings PLC, which he later sold to Siemens/Hell Group, and computer-aided design firm Applied Research of Cambridge Ltd.

Atex's 900 customers, including this newspaper, *The New York Times* and *Business Week*, should continue to receive service and support from the firm, according to an Atex spokeswoman. "Kodak took great pains to find a buyer committed to current customers," she said.

Kodak has also suffered financial pains since acquiring Atex in 1981, according to Steve Edwards, editor of the "Seybold Report on Publishing" in Media, Pa. Atex "has been a losing proposition almost every year since Kodak bought it," he explained.

Quite a deal

Edwards estimated that Chapchal's group is getting Atex for between $10 million and $20 million, "a fraction" of the $80 million Kodak originally paid for it. Neither Atex nor Chapchal would comment.

The deal gives Chapchal access to a large base of newspapers and magazines dependent on Atex equipment that he can theoretically tap for upgraded products, according to Edwards.

Vital stats

Founded in , dA3.

Acquired by Kodak for $8o million in , d8, .

Peaked in , d86 with , ,4oo employees.

Current employment count is only 3Ao staff members.

Currently serves approximately doo customers.

Leaner, nimbler publishing rivals such as System Integrators, Inc. in Sacramento, Calif., and Du Pont Co. have outpaced Kodak during the past few years, Edwards said.

"Even though they've been laying off people and decreasing overhead, [Kodak has] had a hard time adapting new technologies" to its strategy, Edwards added, citing the graphics and color printing features missing from Atex's current offerings.

Fifteen to 20 second-tier desktop publishing start-ups using Apple Computer, Inc. Macintoshes tied to large networks have also dented Atex's hold on the market, Edwards said.

Kodak, which has been looking to unload the reportedly unprofitable unit since early this year, said it will take a $140 million third-quarter hit for unspecified divestitures.

Cognos unveils AS/400 development tools, upgrades PowerHouse

Kim S. Nash
BURLINGTON, MASS.

Cognos Corp. confirmed plans last week for a major upgrade to its PowerHouse fourth-generation language and lifted curtains on all-new tools for building and maintaining IBM Application System/400 software.

The company, which shifted its focus earlier this year from minicomputer-only products to Unix client/server development, still makes a nice chunk of money from AS/400 sales. The planned offerings to feed this revenue pipeline include the following:

- PowerHouse InQuizitive, an end-user report writer, offloads report work from information systems and can export data to PC file formats such as ASCII or accept data from a Lotus Development Corp. 1-2-3 spreadsheet.
- PowerHouse Architect, an application maintenance tool previously available for other platforms, will also run on AS/400s. It generates test applications and prototypes and includes a toolbox of common AS/400 commands that can be used as menu options from the Architect toolbox.
- PowerHouse 4GL 5.87, an enhanced version that sports features such as rapid application development. The latest edition eats up as much as 60% less AS/400 processor power and time, according to a Cognos spokesman.

InQuizitive frees systems designers to do the more complex work of application development.

Likes what it sees

GE Capital Assets Management Corp. has used the products for the past several months. The company said it especially likes InQuizitive because it enables users to generate the bulk of reports once requested of IS. Systems designers are "free to do the more complex, creative work ... of application development," said George Pinsky, programmer/analyst.

Cognos, which claims a midrange installed base of 21,000 sites worldwide, is expected to rake in $167 million in sales for fiscal 1993, compared with $145 million for 1992, according to Alex. Brown & Sons, Inc. in New York. That figure includes proprietary and Unix-based tools, which were launched in May.

The company demonstrated various versions of PowerHouse, including one for Digital Equipment Corp.'s Alpha, at a user conference last month.

PowerHouse 4GL 5.87 for the AS/400 is priced between $8,000 and $161,300, depending on AS/400 size. The other two modules cost from $1,900 to $39,700.

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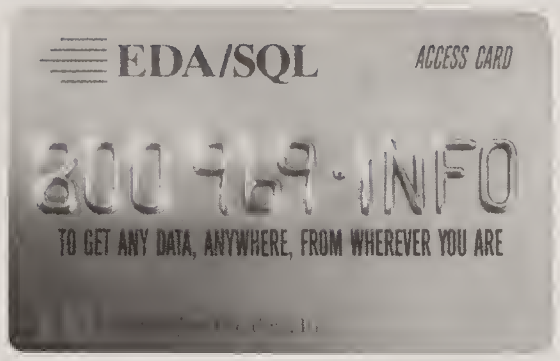
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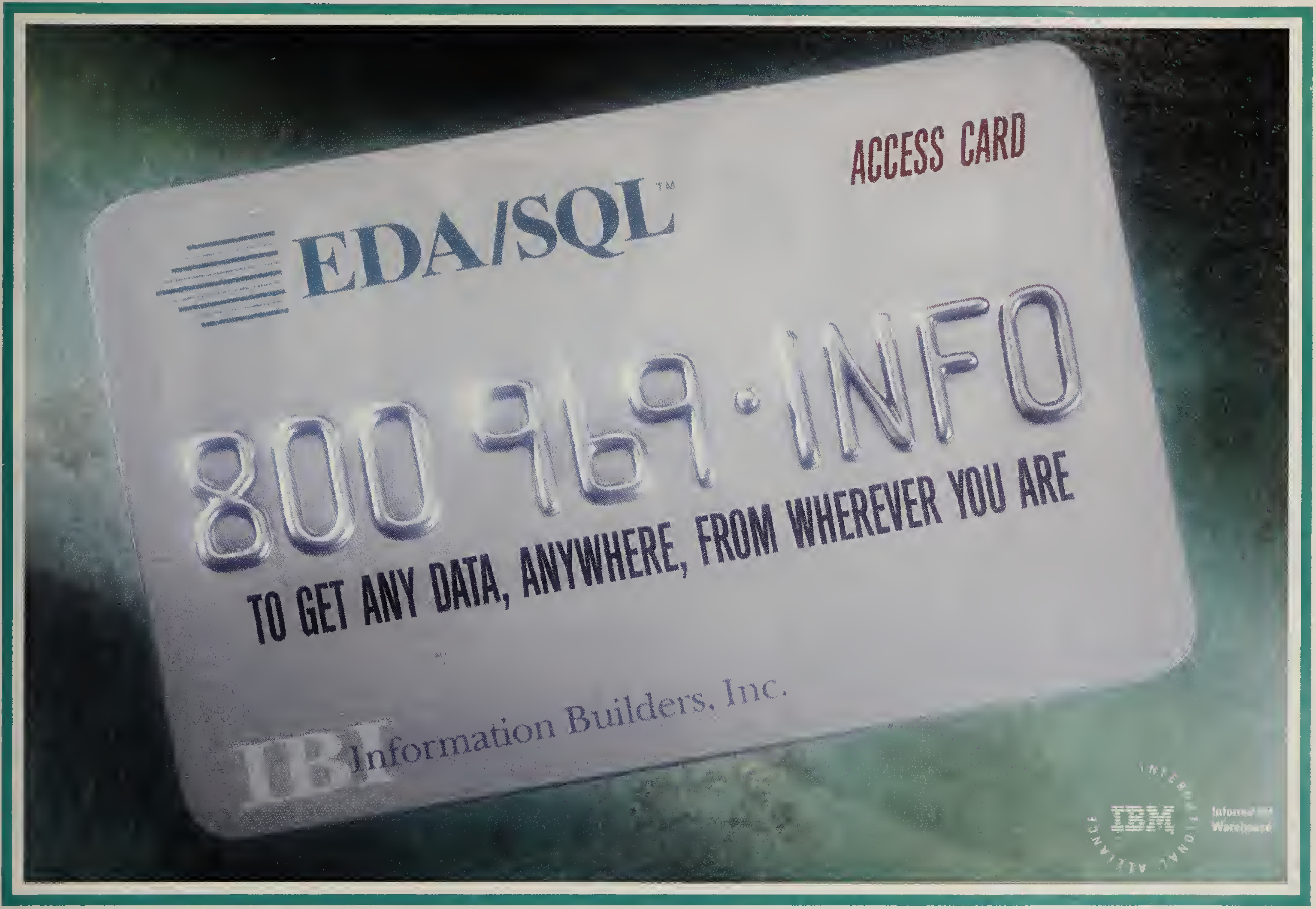
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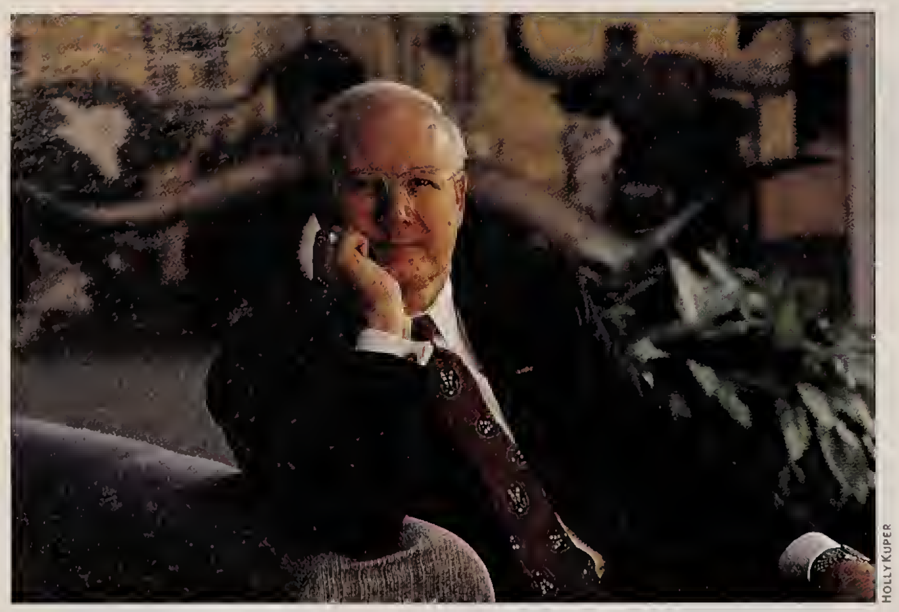
Benchmarking helps improve IS competitiveness

CONTINUED FROM PAGE 1

For example, TI has benchmarked such IS topics as data center costs, help desk operations and managing computer uptime. The goal is to adapt outsiders' best ideas to improve internal processes — or at least trigger some creative thinking.

The payoffs from benchmarking studies, which involve a mix of qualitative and quantitative analysis, range from small improvements in IS procedures to substantial bottom-line results. A comparative study of data center operations allowed Champion International Corp. to identify cost savings equivalent to 3% of its data center budget, and many companies reap savings of 20% or more, according to Tom Walsh, director of MIS network services at Champion in Hamilton, Ohio.


Gary Pollard, *quality director for IS, is ready to handle calls from other IS managers wanting to copy TI's successful user survey*

HOLLY KUPER

After benchmarking, TI threw out its homegrown user survey and brought in a consultant to design a better survey, Pollard said. After a study of managing computer uptime, new procedures were instituted, and a "manager of computer availability" was hired, he added.

What makes it attractive?

Benchmarking is attractive because it fits neatly with the fashionable management trends of business process re-engineering and total quality management. Benchmarking data center costs, for example, can help determine whether outsourcing is necessary.

However, only a minority of IS departments are actively benchmarking. Out of 21 big companies surveyed in the Baltimore/Washington, D.C., area, for example, only four had external benchmarking activities, said William H. DeLone, professor of IS at American University in Washington, D.C.

"Most companies don't do it, but it's a simple, low-cost way to gain some insight into how well you're using [information technology]," said Tobey Choate, an IS consultant at Arthur D. Little, Inc. in Cambridge, Mass.

Even supporters of benchmarking are suggesting that it is not right for all firms. A major study by Ernst & Young and the American Quality Foundation in New York found that benchmarking is fine for industry leaders trying to fine-tune already good systems, but it may be a worthless distraction for "lower performance" firms that have more basic problems to fix.

Benchmarking could turn out to be nothing more than a consultant-enriching buzzword.

Benchmarking could turn out to be nothing more than a consultant-enriching buzzword, but the fact is that some IS managers are forging ahead with ambitious projects.

Banking benchmarking

Judge W. Fowler, director of systems development at First Union Corp. in Charlotte, N.C., came up with the idea for an IS benchmarking study in the banking industry. Conducted by Towers Perrin, Inc., the study will measure the quality of IS service to internal customers at a number of banks.

Benchmarking also crosses industry lines. Just last month, 14 companies and a federal agency began comparing notes on electronic data interchange (EDI), such as how to sign up new trading partners and charge business units for centralized EDI services. Participants include Ford Motor Co., J. C. Penney Co., Polaroid Corp., United Parcel Service, Inc. and Weyerhaeuser Co.

Concern about sharing sensitive information directly with other companies prompted the users to bring in two consulting firms, The EDI Group Ltd. in Oak Park, Ill., and Price Waterhouse's EDI practice in Washington, D.C., to provide confidential analysis.

The most mature area of benchmarking is data center costs and operations. Data center studies compare personnel levels, systems efficiency, equipment expenditures and chargeback costs.

Perhaps the most difficult IS area to benchmark is software development, which is "fraught with comparison errors," said Dennis B. Farley, president of the Development Center Institute, Inc. in Indianapolis.

The costs and productivity of software development vary greatly with the size of the business and other factors, so statistical comparisons should be combined with qualitative analysis of how the organization manages its development staff, tools and portfolio, Farley said.

Getting bogged down in arcane statistics, such as measuring "function points delivered," may be a mistake anyway because it fails the "so-what test" of business managers, Farley said. "They want to know whether the new system saved money or brought in revenue."

Though benchmarking often involves consultants and number-crunching, it can be simpler. At Carolina Freight Corp. in Cherryville, N.C., the IS staff is always on the lookout for IS techniques and software features it wants to copy.

"We steal shamelessly from anyone who has an idea that we perceive to be world-class," said John Rudasill, president of the computer services subsidiary of Carolina Freight. "We do it so much that sometimes we forget to call it benchmarking."

Resources

What follows is a list of benchmarking information sources:

International Benchmarking Clearinghouse, Houston: Offers on-line access to benchmarking studies.

The Benchmark Partners, Inc., Oak Brook, Ill.: Specializes in benchmarking.

Development Center Institute, Inc., Indianapolis: Analyzes the IS software development function.

Zeroing in on benchmarking

For IS organizations eager to plunge into the benchmarking pool, the best advice is to focus, focus, focus.

Experts said companies will quickly sour on benchmarking if they try to study an area that is too broad, such as the whole IS function, or even something slightly narrower, such as computer uptime. "The way to get a very clean, efficient benchmark is to narrow the focus as sharply as you can," said Gary Pollard, quality director for the IS department at Texas Instruments.

For example, IS should determine the source of its problems with computer uptime and then find out how others have dealt with the specific problem, Pollard suggested.

Users and consultants said companies just getting started in benchmarking should take the following steps:

- Pick a few narrowly defined processes where you suspect there is room for improvement, especially those areas that could affect the bottom line.
- Study your own processes to make sure you ask the right questions.
- Look for "target" companies — both inside and outside your industry — that have a reputation for excellence in the areas you want to study. You can find target companies in the trade press and at user group meetings or talk with consultants and vendors.

Of course, not all target companies are willing to dish out information for benchmarking studies. If a competitor or foreign company balks, you may have to use the services of a business intelligence firm, such as Washington Researchers Ltd. in Washington, D.C., or Kirk Tyson International Ltd. in Oak Brook, Ill. — *Mitch Betts*

Get CIO A-OK

What kind of chief information officers try benchmarking? Experts said they tend to be either disciples of the quality movement, which preaches the gospel of continuous and measurable process improvements, or CIOs who want to be prepared when the question of outsourcing is raised by senior executives.

Benchmarking is also a great way for new CIOs to take stock of the operations they have inherited, according to consultant N. Dean Meyer, president of NDMA, Inc. in Ridgefield, Conn. With benchmarking, the incoming CIO can "stretch the management team's vision of what's possible and establish some clear, pragmatic action plans to pursue," he said.

IS benchmarking is limited by the fact that some CIOs believe their operations are so unique it is impossible to get apples-to-apples comparisons with other IS organizations, experts said. Also, CIOs who are entrenched and comfortable in their positions may see no need for benchmarking.

And while many CIOs will acknowledge that IS metrics are important, the actual task of benchmarking is "high on the procrastination list," said consultant Howard Rubin, president of Howard Rubin Associates, Inc. in Lexington, Mass.

For those who choose to indulge, leaders of the benchmarking movement have developed a code of conduct that requires those seeking information to be fully prepared for the interview with targeted questions. It also forbids talk about pricing issues that could lead to antitrust problems and, most of all, requires reciprocity so the sharing of information is a two-way street.

— *Mitch Betts*

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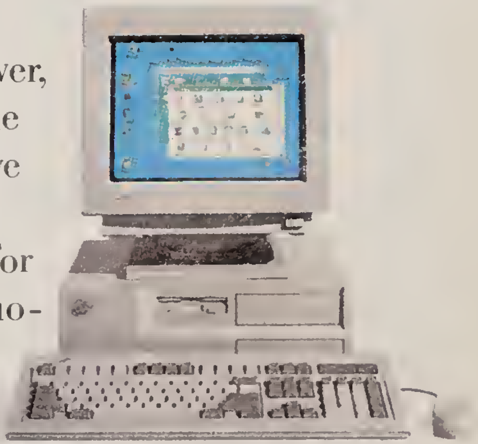

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Corollary unveils Pentium-based server

By Kim S. Nash
LAS VEGAS

With all the hoo-ha erupting at Comdex/Fall '92 over Microsoft Corp.'s expected early-1993 delivery of Windows NT, at least one firm had the foresight to look at what comes next. Specifically, Corollary, Inc. unveiled a three-chip multiprocessing server aimed at developers that want to test NT applications.

The MP Developer Station, due out in February, is a $15,000, fully symmetric system running three Intel Corp. I486DX2, 66-MHz processors and SCO MPX, the multiprocessing version of The Santa Cruz Operation's Unix. A Pentium-based model is due out early next year, after Intel formally ships the advanced chip, according to George White, Corollary president.

Corollary, which supplies boards to Advanced Logic Research, Inc., Everex Systems, Inc. and Digital Equipment Corp., among others, already has one Pentium chip and is currently reworking existing C-bus II hardware to accommodate multiple Pentium processors.

Corollary will phase out MP Developer Station soon after Pentium and NT ship, according to White, because traditional systems vendors will be building their own boxes.

However, giving independent software vendors and corporate developers a way to test their NT creations now to ensure they run bug-free in a multiprocessing environment will boost the market, he said.

No independent software vendors have ordered the product yet, but at least one large user is interested: Sprint Corp. called Corollary the day of the announcement for more information, a spokesman for Corollary said.

RAID rampant at micro fair

By Kim S. Nash
LAS VEGAS

Multiprocessing servers based on Intel Corp.'s Pentium chip got a lot of attention at the recent Comdex/Fall '92, but introductions that took a storage slant on servers were also hot.

Several companies at the show introduced redundant arrays of inexpensive disks (RAID) subsystems, which enable server users to store and manage data dragged down from a mainframe or minicomputer host.

Raidtec Corp.'s FlexArray IX supports RAID Level 0 and 1 for Unix host systems, including IBM's RISC System/6000, Sun Microsystems, Inc.'s SPARCstation, Apple Computer, Inc.'s Macintosh and Quadra and Digital Equipment Corp.'s Ultrix boxes.

Priced between $4,950 and $28,500, FlexArray IX joins **Data General Corp.**'s Clariion in providing RAID support for a variety of Unix workstations and servers. Raidtec is located in Alpharetta, Ga.

AST Research, Inc. introduced a multichannel subsystem for its Premium SE and Manhattan SMP servers. The devices offer Level 0, 1 and 5 and a specialized AST implementation of RAID. A five-channel controller is priced at $3,995 and supports up to 16 hard drives. A three-channel board lists for $2,995 and handles up to eight drives. They are due out next month.

IBM announced Oasas 1 Version 2, which is a software-based disk array manager for use on 386-based Personal System/2s with OS/2 2.0. The product manages up to four arrays, providing RAID 0, 1 or 5 support. Due to ship next month, Oasas is priced at $800.

NCR Corp.'s ADP-92-06 is an array controller for managing up to 35 drives with a maximum of 20M bytes each.

Along with two new products, **NetFrame Systems, Inc.** in Milpitas, Calif., offered price cuts up to 40% on superserver storage offerings and increased warranties from one year to five years. New drives come in a 550M-byte, 3½-in. version for $3,795 and a 1G-byte, 3½-in. edition for $5,495. They are available immediately.

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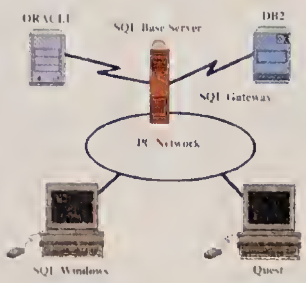

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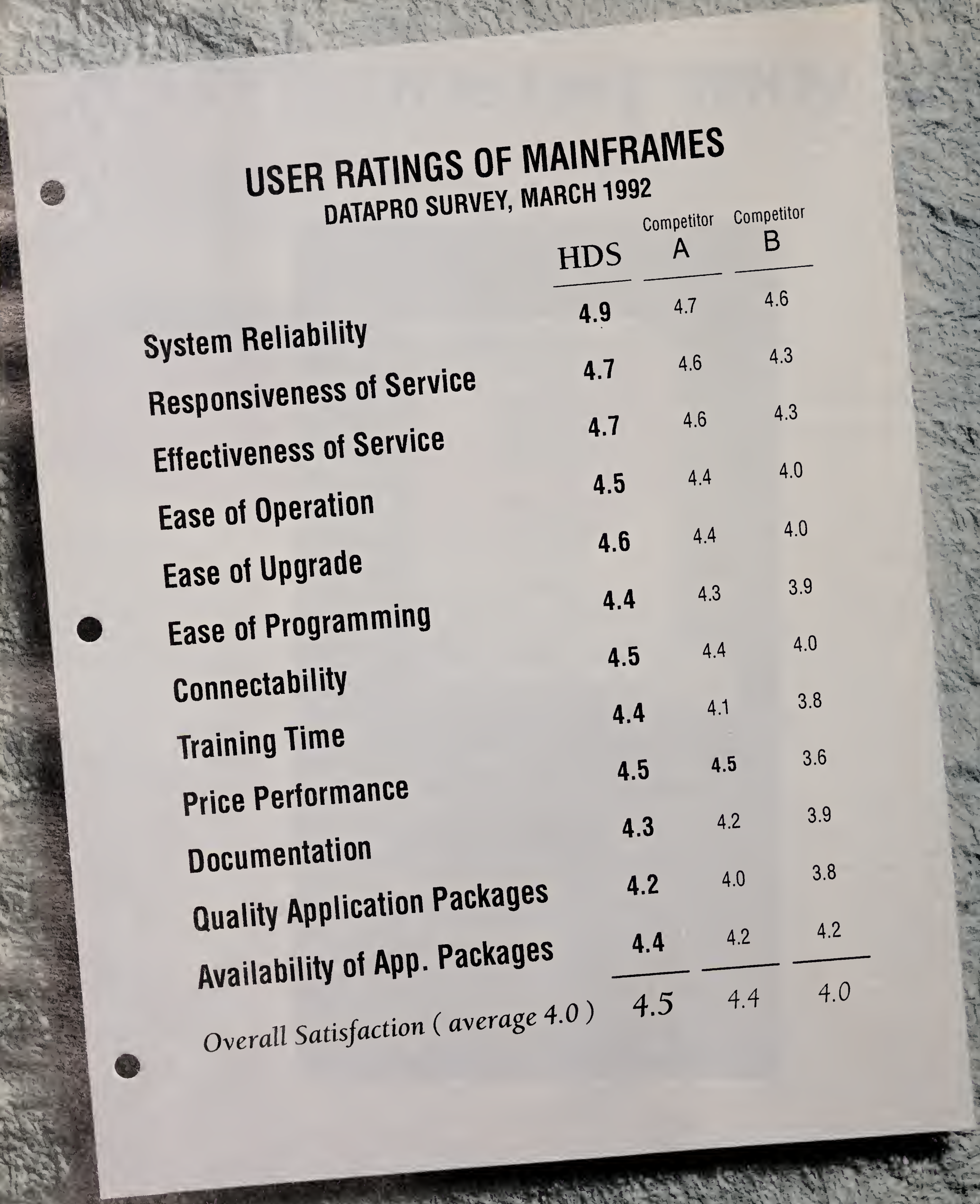

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TRON: Out of the limelight

Operating system of the future has made little progress in the present

By David Kellar

DESPITE THE LINGERING optimism of its proponents, Japan's revolutionary TRON technology appears stalled.

An effort to design the ultimate computer architecture for tomorrow's integrated electronic society, The Real-time Operating System Nucleus (TRON) project was launched with much fanfare in the mid-1980s.

At the time, some observers in the U.S. worried that the project might eclipse the diverse, uncoordinated computer operating systems that had been adopted by the rest of the world. Some even thought TRON would effectively block U.S. vendors from entering the Japanese market.

But competitive pressures and the momentum building behind international standards have so far prevented TRON from becoming an all-encompassing technology.

TRON has its strongest presence in Japan's factory automation and communications industries, according to Ken Sakamura, the Japanese professor who initiated the TRON project in 1984.

Sakamura claims TRON technology is found today in nearly 90% of Japan's computerized industrial machinery and communications equipment. "In time, we hope this success will spread to business and home sectors as well," he added.

However, there is little independent data to support or refute Sakamura's claims. Even the TRON Association, the not-for-profit central coordinator of the various TRON development projects, has not yet surveyed its members to determine TRON's market penetration. But interviews with Japanese companies involved in the project suggest that TRON is not nearly as widespread as Sakamura believes.

TRON standards

While not an overwhelming commercial success, the TRON project has led to Japanese innovations and several standards. . . .

The story is similar in the Japanese communications industry, which has relied on TRON-based operating systems but seems to be moving away from this commitment in response to the growing need to comply with international communications standards.

"These claims [of commercial success] are absurd," said Steve Myers, senior analyst at Jardine Fleming Securities Ltd. in Tokyo. "There are lots of operating systems out there, and no large company has any incentive to make its products conform to any standard other than its own," he said, referring to the dominance of proprietary systems in Japan's industrial-automation arena.

The cordless electronic pen, expected to become the main input device for personal digital assistants and portable computers.

Still, TRON has served as a vehicle of technology transfer and communication among TRON Association members, including every major information technology firm in Japan.

While several Japanese firms have dipped into the TRON market, none has dared plunge in. Recognizing the advantages of a brand new computer architecture designed from the ground up for real-time control, they find it difficult to turn their backs on Unix. Still, proprietary systems remain dominant for some applications because of market longevity and familiarity.

"TRON is like a glacier. It moves very slowly, but it is making definite forward progress," noted James Farrell, director of marketing communications at VLSI Technology, Inc. in Tempe, Ariz., and the official U.S. representative of the TRON Association.

While conceding TRON's weak market status, Farrell is optimistic about its future. "TRON is in the same situation now as the Macintosh was back in 1984," he said, implying that the TRON concept may be within a few years of acceptance. "There is great potential, especially in the area of B-TRON-based multimedia peripherals for existing PCs."

The key to global success, Farrell said, is for the TRON Association to build its membership. "There is a lot of interest in TRON in the U.S.," he said. He has received more than 1,000 inquiries in two years — though only one new member has actually signed up.

The Dvorak-style keyboard, supplied as standard equipment with B-TRON computers and promoted by the TRON Association.

Support of multilingual processing, a TRON goal from the start.

Kellar is an IDG News Service correspondent based in Tokyo.

I-TRON, you TRON?

TRON research is carried out on three types of real-time operating systems: B-TRON, for business and home applications; I-TRON, for industrial applications; and C-TRON, for communications systems. A fifth project, Macro TRON (M-TRON), is aimed at developing an overall operating system architecture for tying I-TRON, B-TRON and C-TRON together.

I-TRON

Fanuc Ltd., the leading Japanese maker of robotic factory equipment, does not use TRON in its real-time control systems, company officials said.

Likewise, Fujitsu Ltd., NEC Corp. and Hitachi Ltd., which all produce microcontrollers for machine automation, concede that TRON-based operating systems account for only a small portion of the real-time operating systems they sell. The majority of embedded control systems sold in Japan remain proprietary.

At Hitachi, most real-time systems sold for embedded robotic applications are based on I-TRON, the TRON architecture optimized for industrial applications. But "TRON-compliant products represent a very small percentage of Hitachi's total line of computer control systems for industrial use," a company official said. "We use Unix or our own proprietary real-time operating system for most applications."

Business and home markets are the last bastions of hope for B-TRON.

C-TRON

In Japan's communications industry, where the communications-specific C-TRON has become something of a standard, non-TRON products hold much of the market. NEC, for example, does not use C-TRON in any of its private branch exchange equipment, and Mitsubishi Electric uses C-TRON only for its high-end communications equipment because "it is too large and inefficient for systems with relatively low computing power," a company spokesman said.

Japan's largest telecommunications firm, NTT Corp., is now moving away from C-TRON as its main operating system to a newly developed specification called Interface for Real-time Operating Systems, which is compatible with international standards.

B-TRON

The last bastions of hope for the B-TRON specification are the business and home markets. "The big difference between B-TRON and other GUI-based operating systems is that B-TRON is designed to control things," said TRON project founder Ken Sakamura. "A Mac or DOS-based PC is just a computer. A B-TRON PC is not only a computer — it also works as a control panel, which makes it much more appropriate for use in computerized homes and office buildings."

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The IBM PS/2® Model 77 486 has the brains and brawn to tackle the toughest jobs. It packs a double-clutch 486DX2 66/33 MHz or powerful 486SX 33 MHz processor. So you get extra-fast completion of processor-intensive tasks.

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To get the rest of the scoop about ComputerLand and the powerful Personal System/2 products, contact your local ComputerLand branch. That doesn't take guts—just smarts.

IBM Business Partner

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THE ONE ON THE LEFT'S MAKES THE ONE ON

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Not only do our printers know PostScript Level 2 and PCL5, but unlike any others, they come equipped with Intelligent Emulation Sensing. A feature that constantly monitors, with radar-like precision, the language that anyone is using at any given time, and then automatically adjusts to that emulation without your having to lift a finger.

Truly network-ready

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They print in sizes up to 11" by 17." They can handle CAD images, spreadsheets, and even double-page layouts. Multiple TwinTrays hold up to 1,500 sheets. Impressed?

With our printers' optional Internal FAX Modem, you can send and receive presentation-quality documents, in sizes up to 11" by 17." Right from your desktop.

COMPAQ

Editorial

Vicious cycle

We've said many times in this column that the only constant in the information systems world is constant change, and the pace of change, if anything, is accelerating.

Here's a good illustration of just how fast things are changing, courtesy of Ronald Chwang, president of PC maker Acer America Corp. I met with him at Comdex and asked him whether he sees any end to the ongoing PC price wars.

The answer, in one word, was no. Price declines may slow a bit with desktop machines but could actually accelerate for color laptops and portables. The onus is on vendors to squeeze every last drop of productivity from their manufacturing and distribution, essentially doing more with the same or fewer inputs. Sound familiar?

Anyway, Acer's Taiwan factory can pump out one PC every 15 seconds. Like other PC makers, Acer uses many industry-standard parts that it has purchased from numerous third parties.

Formerly, the finished goods would be trucked to the docks for a leisurely trans-Pacific trip to the U.S. But Acer found that, because of rapidly falling PC prices, the PCs could lose significant value from the time they are loaded to the time they are delivered to customer sites — a matter of several weeks. Remember when products had life cycles that measured years? Chwang does too, and fondly so. Now the manufacturers are counting weeks.

So like any other company trying to compete in a white-hot environment, Acer re-engineered. It now ships non-price-sensitive materials such as the PC chassis and power supplies by boat and flies the price-shifting motherboards and storage components to the U.S. Then assembly is done locally, with the accent being on customization.

This re-engineering process has allowed Acer to do some remarkable things, such as announce 35 new models recently based on only *two chassis and two motherboards*. That's the level of customization buyers want, and that's what Acer and the other PC makers must deliver and still eke out some profit.

In Acer's manufacturing lines, nothing is permanent. Chwang knows that what is working today will be insufficient in 12 to 18 months. He also knows that his profit margins are tied to Acer's ability to gain the lowest prices for parts. That's done only through volume purchasing. And volume purchasing results only through volume sales of its PCs. It's an incredibly vicious cycle.

Meanwhile, you the customer will continue to see falling hardware prices. Chwang estimated that prices for basic materials for PC manufacturing are falling 15% to 20% per year. He also said the costs to manufacture color screens for laptops are due for some breakthroughs, which could put significant downward pressure on prices.

Bill Laberis

Bill Laberis, *Editor in chief*

Letters to the editor

ISDN not meant as a networking nirvana

Computerworld does the industry a disservice by making snide references to ISDN [Executive Briefing, CW, Nov. 9], where the Trip '92 event is introduced with, "While the industry now knows ISDN will never be networking nirvana . . . ."

ISDN was never intended to be "networking nirvana"; rather, it was developed to be a digital infrastructure. ISDN's value is that it is a public network architecture developed by international standards bodies to provide a digital information highway using existing copper wiring.

ISDN is a practical transition from analog copper communications to an all-fiber public network of the future.

Open your eyes and start talking to businesses that use ISDN today for applications such as access to multiple hosts with terminals or PCs, local-area network interconnection, long-distance access to file servers and other applications.

By describing how companies are using ISDN today and focusing on the real issues, you provide useful information to the industry and dispel all the ISDN myths.

Mike Gawdun
San Antonio

Don't discredit downsizing

I was dismayed by the lack of logic in some of Howard Glassman's comments in his otherwise excellent Viewpoint article about the downside of downsizing [CW, Nov. 2].

He has made the assumption, several times, that current practices are correct practices and must be continued.

In fact, a considerable part of the savings from downsizing may be achieved by carefully examining not just what you're doing and what platform you're doing it on, but why you're doing it.

He also notes, for instance, a need to recover source code for the past five years. What if the life cycle for code in the downsized environment (because of greater flexibility or changing business patterns) is three years? He notes that users must continue to get things on the same schedule. Why, unless they need to?

New systems that are simply downsized versions of old ones on new iron don't really deliver the goods nor do they show an adequate concern for user participation in the downsizing process, which is always a key to successful and creative implementation.

Amy D. Wohl
Bala Cynwyd, Pa.

Viruses are deadly

The answer to the title "Can a 'good' virus be a bad idea?" [CW, Oct. 5] is easy: A "good" virus is always a bad idea!

A virus, a program that spreads among computers covertly, changes the software on the computers it infects. In at least some cases, the changes are damaging.

Please don't make Frederick Cohen's mistake of confusing the idea of a "good" program with the idea of viruses as a "good" way of distributing software.

If Cohen's "good" programs don't spread covertly, then they aren't viruses. Remember: Calling a sheep's tail a leg doesn't make it a leg.

Robert V. Jacobson
New York

Plain and simple

At least one of the answers in your Help Line [CW, Nov. 9] is apparently gleaned from an ancient edition of the Microsoft Word user's guide.

The column lists seven steps of choosing, selecting and typing to remove the display of the last four files at the bottom of the File menu.

Page 65 of the User's Guide for Word 5.0 gives a far simpler, more intuitive procedure:

1. From the Tools menu, choose Preferences.
2. Select the View category and then clear the List Recently Opened Documents check box.
3. Click the close box to close the Preferences dialog box.

In advancing from Word Version 2.0 to 5.0, even this relatively minor improvement vividly demonstrates the industry's continuing strong application support for PC markets.

Mike Bonner
Stratham, N.H.

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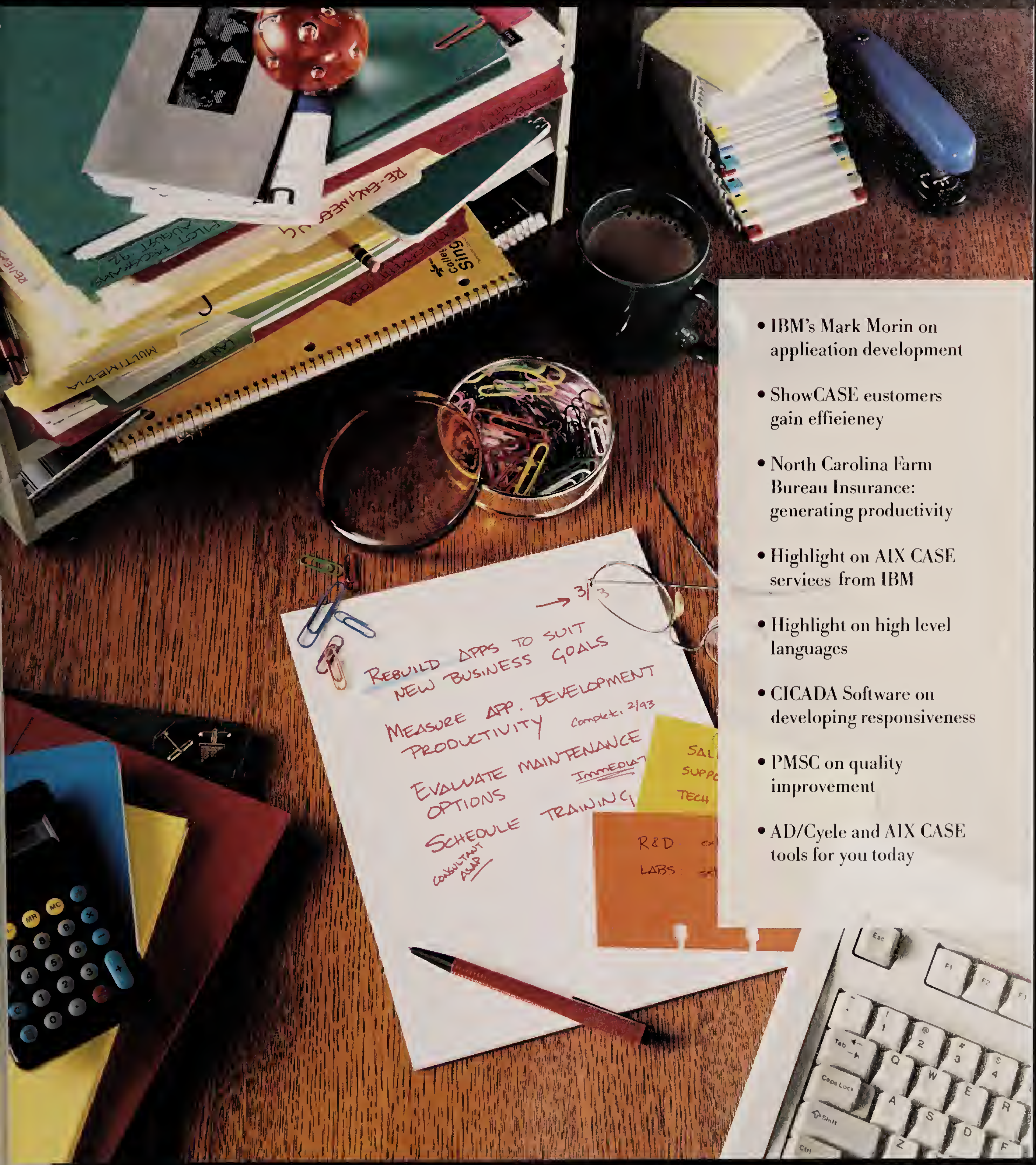
IBM

AD/Today

A GUIDE TO APPLICATION DEVELOPMENT



- IBM's Mark Morin on application development
- ShowCASE customers gain efficiency
- North Carolina Farm Bureau Insurance: generating productivity
- Highlight on AIX CASE services from IBM
- Highlight on high level languages
- CICADA Software on developing responsiveness
- PMSC on quality improvement
- AD/Cycle and AIX CASE tools for you today

"Software. Support. And more support."

Q: From your perspective, what is the focus of IBM®'s information strategies and offerings today?

Mark Morin: Software. Support. And more support. IBM's reputation is that of a hardware supplier. Mostly big systems at that. But, beyond our hardware, mainframes to notebooks, most people don't know that we're the world's largest software supplier. And software is what's driving business today. It's what a company can *get out* of its hardware that makes the difference in profitability. Software applications are often the most important differentiating factor in a corporation's competitiveness. Through software applications, companies can provide faster response to their customers' needs. As a result, both top management and I/S have recognized that application development is strategically important.

"We can only be a success to the extent that we support each application development tool with consulting, education and technical services."

So how are we helping our customers? By delivering a broad range of software development options and implementation services. That is what's critical to giving our customers a strategic competitive advantage. They have specific application development tasks and priorities. And we are providing them with quality tools and services they can integrate into their current environment and benefit from.

Q: In terms of application development, what do your customers need?

Mark: First let me mention that as a company, we face exactly the same issues our I/S customers face in application development. In fact, IBM is the world's largest application development shop. The question of efficient, high quality application development has been vitally important within our own business since the early 1970s. And from the start, IBM has had an enterprise-wide vision of data and application development.

Today our customers count on IBM to: Protect and leverage their current investment in technology, data and applications. Give them a broad range of methodology, process, tool and service options. Address development in an open environment across multiple platforms, including MVS,

Mark Morin,
Assistant General Manager,
Software Marketing,
IBM Corporation

AIX,* OS/400* and OS/2.* Maintain a framework of consistency, integration *and* choice. Enable them to easily adopt the latest technologies. And finally, provide them with a secure and evolving migration path.

Q: How are you accomplishing that?

Mark: Our job is to offer products and services that meet the specific requirements and priorities of each individual customer. We can only be a success to the extent that we support each application development tool with consulting, education, implementation plans and technical services. Tools and services go hand-in-hand. And both are required.

On the tool side, through AD/Cycle™ and AIX CASE, we provide the industry's broadest portfolio of cross-life cycle tools. Even IBM isn't large enough to provide all of these tools. As you probably know, a significant portion of the application development offering is provided by members of the International Alliance for AD/Cycle—a consortium of leading CASE vendors whose tools are fully AD/Cycle-compliant.

These companies include Bachman Information Systems, Digitalk, Easel Corporation, KnowledgeWare, Micro Focus Limited and Synon. I'm happy to say that we have recently added Sapiens International Corporation, and VIASOFT as members.

For AIX CASE, over 20 leading CASE vendors have agreed to integrate their products into the Software Development Environment Workbench. An additional 20 software vendors are targeting their products to CICS™ AIX on the RISC System/6000™ for users developing transaction processing applications. Also, there are hundreds of products that run on the RISC System/6000, including design tools, reverse engineering tools and compilers.

Now, on the services side, our investment plan this year is significantly greater in services and support for customers, and in particular, in application development.

You can expect to see service and support more tightly integrated with everything we offer in application development. It's the most logical step for us as a comprehensive software and services supplier.

Q: What about the tools themselves?

Mark: Our tools and systems are constantly evolving to meet our customer requirements. What does I/S need? Faster, more efficient maintenance. High quality development that meets the needs of end users and fulfills the business goals. Greater synergy across people, tasks, data and tools. Open systems. And a development environment that leverages their hardware investment, from mainframes to PCs.

We're also putting a large investment into workgroup development, to give our customers a development environment that can incorporate their current IBM application development tools. All of this comes directly out of customer requests.

In fact, this is an excellent example of IBM providing a comprehensive application development strategy that protects our customers' technology and data investment, offers a broad range of options and delivers the latest technologies along with a stable migration path.

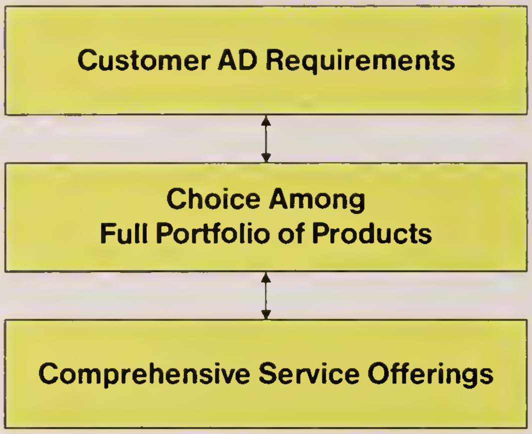
And you can bet we'll back it with every service necessary to make us both a success.

"...we provide the industry's broadest portfolio of cross-life cycle tools."

AIX CASE highlight:
Services, support and training

Application development customers have a place to go for practically all of their questions on how to get to tomorrow faster: IBM service support.

IBM can ease the tasks of installation, start-up and education with a range of services and support for AIX Software Development Environment (SDE) WorkBench/6000, SDE Integrator/6000 and AIX Configuration Management Version Control/6000 (CMVC).


Customer AD Requirements
Choice Among Full Portfolio of Products
Comprehensive Service Offerings

Here are some of the current AIX software development offerings you may purchase:

WorkBench project tool analysis and implementation.

IBM will work with your development staff to evaluate your development tools and recommend how they fit into your evolving development process. The support team can then install selected new tools on your system and set up the WorkBench task manager to invoke tool sets automatically on start-up.

CMVC requirements analysis and setup.

Working with your staff, IBM can evaluate your configuration management and version control requirements. You can use the IBM support team to configure and install CMVC on your system, train your developers in the use of CMVC and show them how it works in your development process.

Software Customization for RISC System/6000.

Simply put, Software Customization is an IBM service that installs fully configured system and application software on your new system while it is being assembled. When the system arrives at your site, it is fully loaded, tested and ready to do productive work. All you add is network hardware, peripherals and your files.

Classroom education.

Classes on the SDE WorkBench, AIX CMVC and SDE Integrator can be custom-tailored to your requirements. These classes can be delivered to your staff at your location or at the IBM support center in Dallas, Texas. These classes include installation, administration, customization and support for both CMVC and WorkBench.

IBM can also provide a class on how to integrate other tools into the WorkBench environment using the IBM AIX SDE Integrator/6000 tool.

Installation support.

Whether your needs are a complete installation or telephone assistance, IBM is prepared to help you install WorkBench, the Integrator and CMVC. You simply determine how much work you are prepared to do and let us do the rest.

SystemXtra™ for IBM RISC System/6000.

This help desk support service provides your authorized technical support personnel unlimited access to an 800 number for your system services needs. That includes hardware and software usage assistance and problem reporting from 8 a.m. to 5 p.m. in your time zone, with emergency call-back service after hours. Through the IBMLink electronic facility, 24-hour access is available for database search and text-based question submission. At the other end of the 800 number is the IBM Technical Service Center with its full-time RISC System/6000 and AIX support specialists.

Services and support from IBM can help you with evaluations, installations, training and system changes. Teams are equipped for your needs and ready to begin today.

For more information contact your IBM marketing representative or call 1-800-547-1283.

AD/Cycle highlight: High level languages

Business environments large and small are becoming increasingly dependent upon information accessed through computer applications, often creating their own custom applications.

One issue these businesses face in planning their application development tool strategy is whether to implement stand-alone tools or select from among those tools designed for compatibility and integration.

Further, in designing an application development environment, the I/S department must decide how to protect the corporation's existing inventory of applications while expanding the department's ability to implement new technologies.

Support through a framework structure.

IBM's high level languages development environment is a single, cohesive framework of cooperative products that can bring new levels of programmer productivity and quality to application development.

Specifically, this framework of tools can help application developers reduce the time-consuming and expensive job of handcrafting code. It also gives developers the ability to reuse existing code in new applications, independent of the language of the application. And it can offer them a boost in productivity throughout the development, test and maintenance process, either on existing or new applications.

High level languages for high level productivity.

At present, four sets of products comprise the high level languages development environment. The first is a suite of language compilers: AD/Cycle C and AD/Cycle COBOL for the System/370™ environment, AD/Cycle RPG/400® and AD/Cycle COBOL/400® for the AS/400. These compilers offer improved functionality and ease of use over previous versions. Over time, other Systems Application Architecture languages will be announced and supported under the high level language development environment.

Next, the AD/Cycle Language Environment/370™ provides developers with one run-time environment for all applications, regardless of the application programming language. In a single product and through a single, shared interface, you get a common set of services, protocols and linkage connections.

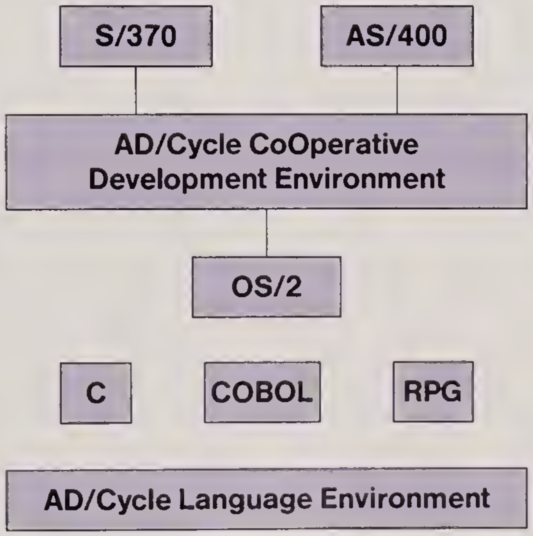
AD/Cycle CoOperative Development Environment for the System/370 and AS/400 (AD/Cycle CODE/370 and AD/Cycle CODE/400) provide cooperative edit, compile and debug capabilities that support multi-language, multi-system environments. CODE/370 and CODE/400 can enable you to develop applications faster, remove errors sooner and leverage the power of workstations.

Finally, Micro Focus Limited offers the Micro Focus COBOL Workbench. The COBOL Workbench complements CODE/370 and enables developers to create and maintain COBOL applications on the workstation that run on workstation *and* mainframe platforms.

Putting practical advantages to work today.

As a composite set of tools, the high level language development environment can provide you with a clear, integrated path to application development. Further, because most of these tools can operate in a stand-alone mode and provide increased productivity and quality, you can begin to implement them today one step at a time.

The AD/Cycle Language Environment/370 provides one run-time environment for your applications. AD/Cycle CODE/370 and CODE/400 offer cooperative edit, compile and debug capabilities.


S/370
AS/400
AD/Cycle CoOperative Development Environment
OS/2
C
COBOL
RPG
AD/Cycle Language Environment

An interview with the data processing managers at North Carolina Farm Bureau Insurance

"We don't view CASE as an option. It's a critical need."

Q: You started looking at CASE tools to change your approach to data processing back in 1985. How did this come about?

Dennis Nelson, Data Processing Manager: Our portfolio of application systems had started to age, and the question was how they were going to be replaced. The decision was to design and develop the insurance systems in-house. Systems are dynamic, constantly requiring changes and enhancements. To have the work done correctly and on time meant doing it ourselves, and not relying on outside sources.

Furthermore, we support 650 agents in the field and 550 users in the office who need timely access to constantly changing data. And we differentiate ourselves largely by the information services we can provide our customers. The key is efficient application development.

So we have been working toward reducing our use of packaged software, creating our own development methodology, moving our development effort from the mainframe to the workstation, developing a relational database perspective, replacing duplicate, free-standing databases with a shared data environment and installing CASE tools that would take us to application generation directly from models.

We anticipated something like AD/Cycle, and we were delighted when it was announced.

Q: What are you doing with AD/Cycle tools currently?

Walt Scheper, Data Administration Manager: We have a relational commercial risk application from a third party developer. The data resides on an OS/2 LAN server and is not part of our DB2* mainframe policy system. To get this policy risk information out to our agents and adjusters in the field, we're implementing IBM's Distributed Database Connection Services/2 and moving the data to DB2. IBM has been supportive in this endeavor. They have provided proof-of-concept assistance along with training and Field Television Network broadcasts.

With these tools, we'll connect the application to our host-based policy risk database, using the host as a server.

Dennis Nelson
Tom Morris
Walt Scheper

AD/Today Reader Comment Card

Please fill out and drop in the mail today. Or call 1 800-688-8632.

Name__________ Title__________

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Telephone (______)__________ Fax (______)__________

What is your current application development environment? (Check all that apply)

MVS______ VM______ AIX______ OS/400______ OS/2______

What is the timing of your application development needs?

Immediate______ Next 3 months______ Next 6 months______ Next 12 months______

What are your application development priorities?

Business modeling______ Design/Analysis______ Generation______ Maintenance______

I found AD/Today to be:

Very useful______ Useful______ Not useful______

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CW

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That will provide risk information throughout the network, putting critical information at everyone's fingertips.

Also, we are in the initial phase of redeveloping our current policy processing system, which has more than one million lines of code. We have identified what the major business functions are and will be using CASE tools to model our information needs and develop the required processes.

Tom Morris, Systems and Programming Manager: Right. We've either got to have CASE tools that can generate code, or an extremely large staff. So to that end, we're using the BACHMAN CASE tool set for data and process modeling. We plan to use BACHMAN/Designer to generate our application code.

We've developed several application systems using IBM's Cross System Product. We plan to install IBM's Cross System Product/2 AD in 1993.

Walt: In effect, we're building a corporate data model that will help us consolidate databases residing in seven distinct departments for 650,000 clients, claimants, witnesses and other involved parties. We want to build a single-view database architecture that will serve as a hub for the rest of our architecture and applications.

Tom: We don't view CASE as an option. It's a critical need. Especially in terms of IBM's Cross System Product code generation. We want to develop all of our applications in-house and maintain them using a top-down approach, starting with business models. Using this approach, we'll be able to handle business changes in a more effective manner.

Q: How have these tools and processes affected your programming staff?

Tom: Once fully implemented, CASE code generators will reduce the amount of code programmers must write. That will eventually redefine the programmer's job, enriching the quality of the tasks they perform. The tools will take over many of the mechanical, mundane and repetitive tasks, allowing the developer to concentrate on the business needs.

Walt: That's key. We now understand the real business need for information at least ten-fold better than we did a few years ago. We used to just analyze and fix individual information problems. Now we understand the entire information flow, and our solutions are not little isolated applications anymore. They're corporate solutions, based on a much wider perspective. And it's had a positive effect corporate-wide.

"...we differentiate ourselves largely by the information services we can provide our customers. The key is efficient application development."

Keys to success with AD/Cycle

IBM would like to extend a special thank-you to all ShowCASE participants and the author, Bill Pope. Bill is a consultant specializing in information systems engineering planning and implementation.

In 1990, IBM established a partnership with 30 Fortune 500 companies that were adopting AD/Cycle. The partnership, called ShowCASE, gives IBM a chance to study application development teams making the transition from hand-crafting code to using the CASE approach of AD/Cycle.

This article summarizes research done by the author to understand the gains these companies experienced, specifically in increasing programmer productivity and application quality.

Several ShowCASE customers collected productivity data and evaluated the quality of applications delivered. On the next page you can see the customers' results for their first and third projects. At the time of this research, seventeen members of ShowCASE had successfully completed one or more projects. The increases in productivity and quality are impressive.

But perhaps the most interesting finding was the discovery that these same seventeen successful companies shared several common preparatory steps before implementing AD/Cycle. In particular, there are twelve steps that the companies agreed were important. These twelve steps seem to contribute enormously to a successful launch of AD/Cycle.

We thought you would be interested in a description of these keys to success in implementing AD/Cycle or AIX CASE projects:

Select an AD/Cycle area of focus.

Choose a pilot program based on your system engineering expertise, your relationship with the system's users, business and I/S management support, strategic needs and current AD/Cycle capabilities. These areas can include: enterprise modeling and I/S architecture planning, business process improvement, application generation, maintenance or reengineering. Information Warehouse™ development is also a suitable area of focus for an AD/Cycle pilot project.

Obtain the buy-in of management.

To help ensure your pilot project is a success, get the buy-in of the entire team, including the management of application development, data administration, database administration and the business unit that will use the application.

Bring I/S management and business management together.

Establish a forum to discuss and document all objectives and clear expectations for results. Success requires a goal-oriented approach by a team often made up of corporate managers, I/S management and staff, and users.

Develop an AD/Cycle implementation plan.

The plan should include all of the key activities listed here and assign management responsibilities, resources and schedules for each.

Appoint an implementation project manager.

Charge this person with the authority and responsibility to coordinate and direct representatives from all involved groups. Good communication skills and credibility are a must.

Acquire an engineering-oriented development methodology.

A methodology designed for CASE tools and processes is a requirement. It describes the types of planning, analysis and design models your team will use to develop an application. While those who developed their own methodology recommend allocating two years for the task, about 70% of the survey group purchased a finished, proven methodology.

Develop tool usage guidelines.

AD/Cycle offers many tool choices resulting in some overlap between tools. You can save a lot of time by having a select group of developers become familiar with the tool options and best procedures for your environment. They can then document specific tool usage procedures to be followed by the entire team.

Provide early training on the methodology and tools.

Early, formal training is a critical ingredient. Training, at different levels, should include I/S management or staff, developers and users. Each group will be affected in different ways by the shift to automated methods, and early preparation helps them get the most out of the change.

Build a support organization.

A good guideline is to dedicate one support person for each ten to fifteen developers to provide help with your method, tools and model management. Whether your CASE specialists are employees or consultants, systems engineering and CASE tool experience is a must.

Initiate cultural change programs to transition programmers and users alike.

Help people prepare for change—and even welcome it—with in-house education, benefit-oriented presentations, promotions and awards. While most I/S professionals are ready for change, some will still resist it. Transition programs can smooth the way with both I/S management and staff and users.

Utilize consultants if systems engineering skills are not available in-house.

You can make the most of your investment by taking advantage of IBM's consulting services such as situation assessment, long-term planning, transition management, AD/Cycle training, implementation and support.

Measure your progress.

Start measuring your current productivity and quality levels as a baseline reference. Current-approach measurements often provide strong data to support your need to change to AD/Cycle. And if you have an experience similar to the ShowCASE participants, your third project results will show that vast improvements were yours to have.

The chart below shows the gains reported by those companies that kept measurements for both traditional and AD/Cycle projects.

ShowCASE Productivity and Quality Gains

Application Under Development:	1st Project	By 3rd Project
• Improved Application Development Productivity:		
— CASE plus 4GL Application Generator	20-50%	100-200%
— CASE plus 3GL Manual Coding and Test Tools	21-25%	50-100%
• Reduced Application Delivery Time	0-27%	50-56%

Application In Operation:	Overall
• Improved Application Quality	82-97%
• Reduced "Maintenance" Staff Allocation	30-80%
• Improved Application Enhancement Productivity	20-40%

"...take a close look at a combination of the AS/400, PS/2s and AD/Cycle tools."

Paul Devitt is the Vice President of Management Consulting for CICADA Software Group in Toronto, Canada.

Q: Unlike most AD/Cycle customers, your company exists to sell the software it develops. Can you describe your business challenge as it relates to your development strategy?

Paul Devitt: We're a three-year-old company in the business of developing application and productivity software for specialized industries. Our success hinges on controls and productive development. Our customers are always looking for the most function possible, but typically within tight budget constraints.

CICADA sells support, and TCR (Total Customer Responsiveness) is important to us. This requires always listening to our customers and anticipating their future needs. Our in-house development is done using OS/2 intelligent workstations and CODE/400 (AD/Cycle CoOperative Development Environment/400).

Q: What led you to choose the AS/400* as your primary development platform?

Paul: There were several reasons. First, we saw the AS/400 as a scalable and versatile system offering a wide range of development tools for our client base. One of the biggest client bases out there is customers with AS/400s.

Second, AD/Cycle provides the opportunity for standardization and consistency we need for responsiveness throughout the life cycle of systems. On any day, I can expect the sales manager for one of our customers to say, "We want to break down sales in a number of new ways, immediately." And I can honestly say, "We can do it," without concern that we can't find original source code or get our programs compiled quickly. Our CICADA program generator and AD/Cycle tools provide a consistent application development strategy.

Third, we wanted in-house productivity. CODE/400 intelligent workstation development is another excellent productivity tool. Its workstation compile option has taken a considerable load off our mainframe and it's quick. CODE's design specification utility is great for designing screens and reports. We have been able to increase our productivity by as much as 25% using individual CODE/400 features in just six months.

Q: Why is AD/Cycle important to you?

Paul: We believe in standardization. And AD/Cycle provides a framework for developing and delivering services. We don't use all of the AD/Cycle tools, but you need to have some standardization among tools in the marketplace. Look at the disruption when a key individual leaves a development team. That just shouldn't be the case. We're rectifying the problem with the integration and consistency we get from AD/Cycle.

AD/Cycle ensures that something important is not lost between two technicians. And it ensures that what one technician creates can be used by the other one. That means gains in productivity. Specifically, reduced training on tools, increased synergy between programmers and their tasks, and fewer errors.

We find AD/Cycle gives us the flexibility to choose the tools we want *and* it gives us the standards and discipline to do consistent implementation.

Q: How else has IBM helped?

Paul: IBM has met our product expectations and matched them perfectly so far. They are constantly providing innovative tips and techniques for employing the AS/400 and AD/Cycle tools to improve our business.

Q: Do you have any suggestions for other customers looking to improve their development process?

Paul: Yes. First, look for a system that can grow with your business. Second, consider the use of intelligent workstations. Third, standardize and put common controls on your processes. Fourth, ask IBM for help. Lastly, look at a combination of the AS/400, PS/2s and AD/Cycle tools. We've found that this solution can significantly improve productivity. After all, that's what it's all about.

AD/Cycle: A framework of choice

Q: Your company started out as the data processing department for an insurance company, and now it would be difficult to find a major insurance company that doesn't buy software applications from you. What are your goals for application development?

Bill McNair, Manager of Data Administration and Standards, Policy Management Systems Corporation: Our primary business is developing applications that run on MVS, OS/400, OS/2 and PC/DOS. We have over 2500 developers in this organization. You can imagine the importance of AD/Cycle to me.

My goals are to improve developer productivity, boost product quality and decrease maintenance. I'm looking for a 20% reduction in our time-to-develop, with an even greater reduction in number of defects.

Q: What do you get from AD/Cycle?

Bill: In a general sense, openness, the flexibility to choose the tools and techniques we feel are the best of breed, and a framework designed for consistent implementation and use of these tools. All based on the methodologies *we* choose. We've enjoyed two years of continual expansion with AD/Cycle using planning, analysis, design and construction tools. With each of our product releases, we've expanded the use of new tools in our environment. And now the efficiency of our release schedule is closely associated with our AD/Cycle implementation schedule.

More specifically, the whole AD/Cycle environment improves the likelihood that the final implementation meets our customer needs, because it's based on their requirements. We can drive development from business models and associate development information across the life cycle. We've always done a good job of understanding customer requirements, but before AD/Cycle it was a manual procedure. AD/Cycle has insulated the developers from many of the complexities of development and allowed them to focus on fulfilling the business requirements.

We have a clearer, automated connection from the requirement to the implementation. And we track the requirement all the way through development. The end product is much easier to maintain. Now maintenance means *adding capabilities* to accommodate changes in the requirement, instead of fixing bugs.

Plus, these days, I/S is being run more as a business. We need to help our customers show cost justifications. AD/Cycle helps us more accurately predict the cost side of the equation.

Q: What do you gain from IBM itself?

Bill: A strong company, mature products and the ability to grow. Plus, IBM's technical support. It's always excellent. It's one of their greatest strengths. And don't forget languages, databases, operating systems, and standards, such as CUA™ (Common User Access) and SAA.™

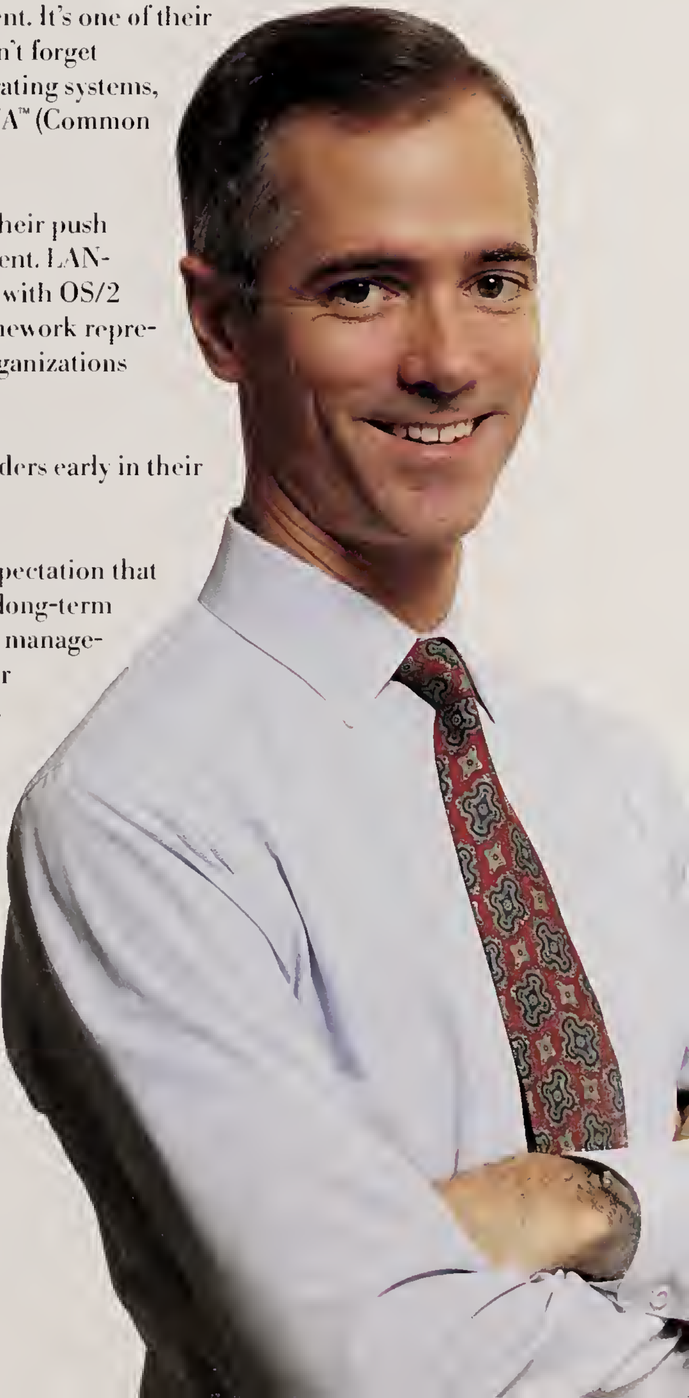
Most recently, I welcome their push into workgroup development. LAN-based development teams with OS/2 tools and a consistent framework represent what development organizations need the most.

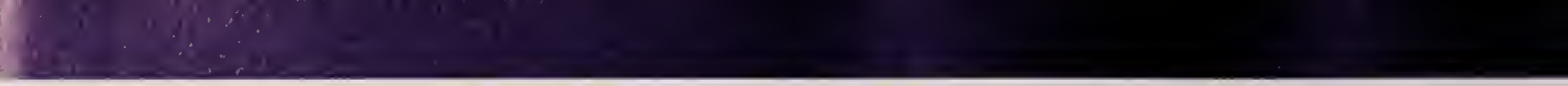
Q: Any suggestions for readers early in their implementation?

Bill: Set management's expectation that the payoff is going to be a long-term proposition, but make sure management also hears about your short-term success stories. There will be many of increasing significance. Improved quality and productivity are our key measures, but don't ignore the positive reaction of the developers themselves. They enjoy working in this new environment, and they take pride in doing quality work.

"I'm looking for a 20% reduction in our time-to-develop."

Bill McNair





From the I/S professionals featured in this issue:

> ***"…we track the requirement all the way through development. The end product is much easier to maintain. Now maintenance means adding capabilities to accommodate changes in the requirement, instead of fixing bugs."***

Bill McNair
Policy Management Systems Corporation

> ***"We believe in standardization. And AD/Cycle provides a framework for developing and delivering services."***

Paul Devitt
CICADA Software Group

> ***"…we differentiate ourselves largely by the information services we can provide our customers. The key is efficient application development."***

Dennis Nelson,
North Carolina Farm Bureau Insurance

> ***"Our job is to offer products and services that meet the specific requirements and priorities of each individual customer."***

Mark Morin
IBM Corporation

Get the application development business partner video series

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- SAPIENS Development MVS
- SAPIENS Run Time VM
- SAPIENS Run Time VSE
- SAPIENS Run Time MVS

Analysis/Design Tools:

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- BACHMAN/Database Administrator
- BACHMAN/Designer
- EASEL Workbench
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- KnowledgeWare ADW/Design Workstation
- KnowledgeWare ADW/Documentation Workstation
- KnowledgeWare ADW/MVS
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Languages:

- SAA AD/Cycle C/370
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- SAA AD/Cycle COBOL/370
- SAA AD/Cycle COBOL/400
- SAA AD/Cycle CoOperative Development Environment/370 (CODE/370)
- SAA AD/Cycle CoOperative Development Environment/400 (CODE/400)
- VS FORTRAN
- SAA FORTRAN/400
- SAA AD/Cycle Language Environment/370
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- Micro Focus COBOL Workbench
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- Micro Focus CICS Option for Micro Focus COBOL Workbench
- Micro Focus Host Compatibility Option for Database Manager
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Generators:

- Cross System Product/370 Application Development
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- Cross System Product/2 Runtime Services
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- EASEL/Win Production Compiler
- EASEL/DOS Production Compiler
- EASEL/2 Runtime Services
- EASEL/Win Runtime Services
- EASEL/DOS Runtime Services
- KnowledgeWare ADW/CSP Enablement Facility
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- Synon/2E
- Synon/2G
- Synon/Client Server Generator (CSG)
- Synon/Client Server Driver (CSD)
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Knowledge Based Systems:

- AD/Cycle—The Integrated Reasoning Shell Development/2
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- COBOL and CICS/VS Command-Level Conversion Aid (CCCA)
- COBOL Structuring Facility (COBOL/SF)
- SAA AD/Cycle Dictionary Services/MVS
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- Software Analysis Test Tool (SATT)
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- VIASOFT VIA/Renaissance
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- VIASOFT VIA/Redevelopment Series
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- Workstation Interactive Test Tool (WITT)

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- SAA AD/Cycle Workstation Platform/2 (WSP/2)

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- KnowledgeWare ADW/Documentation Workstation
- KnowledgeWare ADW/Cross System Product Enablement Facility
- KnowledgeWare ADW/Construction Workstation-MVS
- KnowledgeWare ADW/Construction Workstation-400
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Long-term planning is strictly for the birds

Ken Harris

MICHAEL SIGGINS

The best laid plans of mice and men often glang aplookt. And when that happens, no one remembers that the five-year forecast was based on scientifically quantifiable formulas that precisely captured the relationship between robust results and the plan's magic dust.

On the other hand, when you give your customers what they want, when they want it, they don't even care if you exactly fitted Insert A into Slot B.

We're in the retail fast-food business. Speedy chicken is our thing. Isolated, monolithic, intergalactic plans are not. Our restaurant associates use terms like "quick service," "limited time only" and "the competitor down the block." In restaurants, two minutes is a long time to wait. We in IS need to think the same way.

We need to focus on results, not process.

At best, our long-term strategic plans should only aim for directional accuracy. They should not prohibit contrary tactical decisions. Our short-term plans should be developed with erasable ink, communicated via mantra and, most important, validated by results customers want.

Plans take valuable time to prepare and tend to lock people into channels of thought, action and investment. We instead follow two maxims: 1) "Since some pieces hit the floor, cook extra chicken," and 2) "Throw away expired product, regardless of the cook's pride in it."

IS lives in the same environment as the front line of our business: fast paced, customer-pleasing and certainly not chicken-hearted about taking risks. We've found service success requires short-term delivery, hands-on prototypes, small project teams and large doses of direct, immediate customer feedback. And, because most customers don't eat the wrapping, we simply eliminate the paperwork.

There is a dramatic cultural shift here. This is not a way of operating that can work in the context of a formal planning process, but it sprouts wings when seasoned with a heavy dose of communication — "surroundsound," as we call it. That's an organizational frenzy for constant, thorough, informal communication involving everyone, conveying a willingness to change and engendering respect, quality and empowerment.

In short, it's the essence of leadership.

And leadership is not just for quick-service restaurants. Today, every business and business function is being squeezed to reduce overhead, improve customer service and shorten the time to market for new products. In fact, the longer and more complex the development cycle and the larger the organization, the more that can be gained from leading this chicken across the road.

With customers demanding more, sooner, for less, it's essential to the survival of IS that we find a new paradigm.

Scrap the planning; fry the process. Let's create an environment where results happen because IS professionals are living, breathing and thinking like front-line employees. Let's swap the planning process for a focus on results, with customer satisfaction as the only metric.

Harris is vice president of worldwide information services at Kentucky Fried Chicken in Louisville, Ky.

Bloodless revolution won't work

COUNTER-INFORMATION *by* Michael Schrage

The "Information Revolution" is over. We lost.

For years, we all spoke, shared and believed the gospel that information management was the key to our corporate competitiveness. We honestly thought our abilities to process and package data empowered our organizations. Well, we were wrong, and we should have the guts and integrity to admit it.

Take a look at the numbers. Morgan Stanley's Stephen Roach, Harvard's Gary Loveman and a slew of other economists offer damning evidence that our huge technological investment in white-collar productivity has virtually no measurable return. The truth is that U.S. companies still spend billions of dollars every year on information technologies, with very little to show for it.

That's why words like "outsourcing" and "downsizing" now define budget allocations. That's why more and more companies now view information technology as administrative support, rather than strategic necessity.

So what happened? We fundamentally misunderstood both our technologies and organizations. The IBMs, the DECs, the Microsofts, the management gurus — and all of the companies that bought into their infoshticks — believed technology created value by making it easier for organizations to access, manipulate and transmit information. While that might be true to an extent, it reflects an essential ignorance of how organizations really create value.

Information doesn't create value — people do. Indeed, it is the relationships between people that generate value in the enterprise. By viewing the world solely through the lens of information, we guaranteed that we would have a warped perspective of our design challenges. Humans are "information processors." But if that's how we treat people, should we be surprised that the Information Revolution has yielded such puny productivity results?

That's why this column is called "counter-information." Being counter-information doesn't mean you're "pro-nonsense." It means you recognize that a better balance has to be struck between the information imperatives of an organization and the relationships that really make it run.

Instead of simply asking, "What's the critical information that people need, and how do we get it to them as swiftly and efficiently as possible?" network architects have to start asking, "What are the key relationships both inside and outside the firm, and how can we use the technology to augment them?"

Where do you think the value of a Sabre reservation system is? In the information it manages or in the customer communities it creates? The answer is, of course, "both."

But when Max Hopper writes the definitive piece on Sabre for the *Harvard Business Review* and doesn't use the word "relationship" once, something is wrong. When companies such as IBM and DEC argue, in the face of customer skepticism, that their techno offerings will boost "information productivity," something is wrong.

Certainly information matters. But quality relationships — relationships that generate innovation and ideas — should matter more. If you focus your design efforts on managing information, you will end up with networks that do a great job of managing information. That's it. Your design implicitly says your organization values information management over people management.

If, however, your network architectures are explicitly designed to encourage and support productive relationships between people (instead of between people and information), chances are your organization will tap talents and abilities you didn't know it had. That's the revolution that matters.

Schrage consults and writes about how technology reshapes the way people interact. He is a visiting scholar at the MIT Sloan School and the Laboratory for Computer Science and author of a book on collaborative technologies, *Shared Minds* (Random House, 1990)

Life is full of tough choices: A performance car vs. a practical car. A job that satisfies your pocketbook vs. one that satisfies your mind. A disk storage solution that offers speed vs. one that offers complete data availability. Well, the last choice just got easier to make. Because now there's the Symmetrix 5500 ICDA,™ from EMC.

On one hand, the Symmetrix 5500 is fast. It's based on EMC's Integrated Cached Disk Arrays (ICDA™), which means it can access information on an IBM or compatible mainframe computer almost as fast as you can say "Where's my data?"

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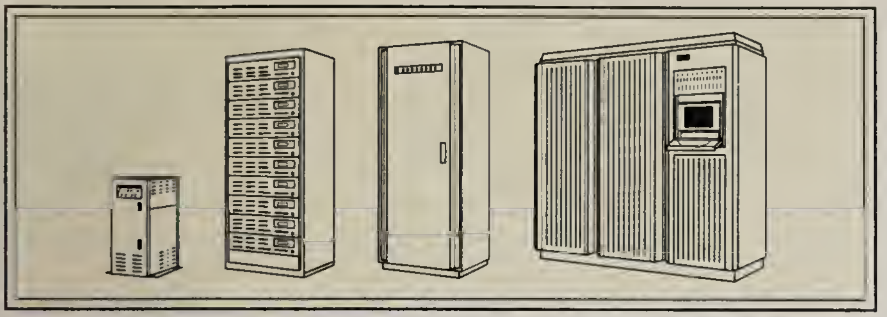

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Commentary

Charles Babcock

Alpha's real appeal

DEC's new Alpha architecture resembles the Apple Lisa in more ways than one.

Like the Lisa, it is a strongly conceptualized system, with a number of advanced ideas incorporated into one package. And, also like the Lisa, Alpha sometimes seems as though it is a step or two ahead of its time.

Does the world really need a 64-bit architecture?

> PALcode has been lightly described as Alpha's 'underwear.'

Well, no, most of the world doesn't. The number of address spaces a 64-bit system can address is a very large number — one that only a Ross Perot statistician, used to the dimensions of the national debt, could enumerate. Meanwhile, only the largest sites and customers have outgrown the virtual memory limits of 32-bit systems — 4G bytes — and for the most part, they can find ways around those limits short of a leap to 64-bit.

Nevertheless, Alpha is intriguing on several points, not the least of which is its Privileged Architecture Library, better known as PALcode (see story page 67).

Terry Shannon, the DEC-watcher analyst in Ashland, Mass., once lightly described it as Alpha's "underwear," and the term isn't entirely inappropriate.

PALcode in a sense is neither hardware nor software but rather a hidden layer beneath the visible parts of the system that gives Alpha its ability to run more than one operating system.

Circuit booster

With any computer design, a set of decisions must be made as to what can be managed within the logic chip and what should be traded off as external functions.

In large systems, manufacturers put functions such as memory management, interrupts and context switching into microcode. Users sometimes roll their own by writing assembly language routines. In the world of the PC, BIOS library routines take over the chores. In Alpha, PALcode substitutes for microcode and BIOS.

Through PALcode, DEC freed Alpha's RISC chip circuitry of any speed-impinging tasks. When an Alpha system is booted, a hardware dispatch orders the correct PALcode to be loaded into main memory from a FlashPROM. Thus the functions external to the chip are discharged by instructions that are tightly coupled to the rest of the system, much like microcode. In this sense, PALcode merely duplicates microcode and represents no advance.

Flexibility breakthroughs

But what DEC has really accomplished in PALcode is a measure of flexibility that has eluded system designers in the past.

PALcode for different operating systems can be loaded into one FlashPROM — Alpha currently ships with both VMS and OSF/1 PALcode on board — and there's no barrier to adding another operating system, such as Windows NT, as it becomes available.

Perhaps more importantly, both the underlying Alpha circuitry and the operating system can change, but DEC guarantees that the interface between them will remain the same. Even the PALcode instructions underlying the interface can change to optimize performance, which gives DEC considerable flexibility in future chip design.

In this sense, PALcode is a kind of new "social contract" between hardware optimizers and the developers of operating systems and other external layers, who remain interested in rich functionality.

Each world is now free to pursue its own goals as rapidly as possible with the PALcode interface as the only thing fixed between them. Across that interface, each party can be sure of shaking the other's hand.

Babcock is *Computerworld*'s technical editor.

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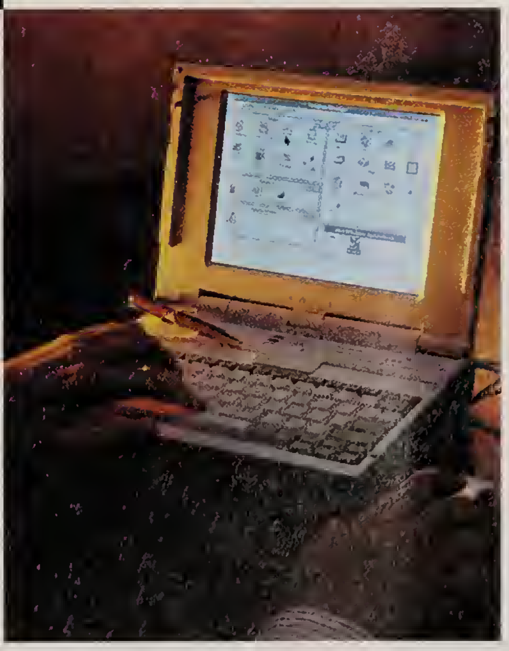

NOTEBOOK COMPUTER COMPARISON

Model	ACROS 325SE	Compaq® Contura™ SL Notebook	Dell® NL25	Gateway™ 2000 Nomad
CPU	386SXL/25	386SL/20	386SL/25	386SXL/25
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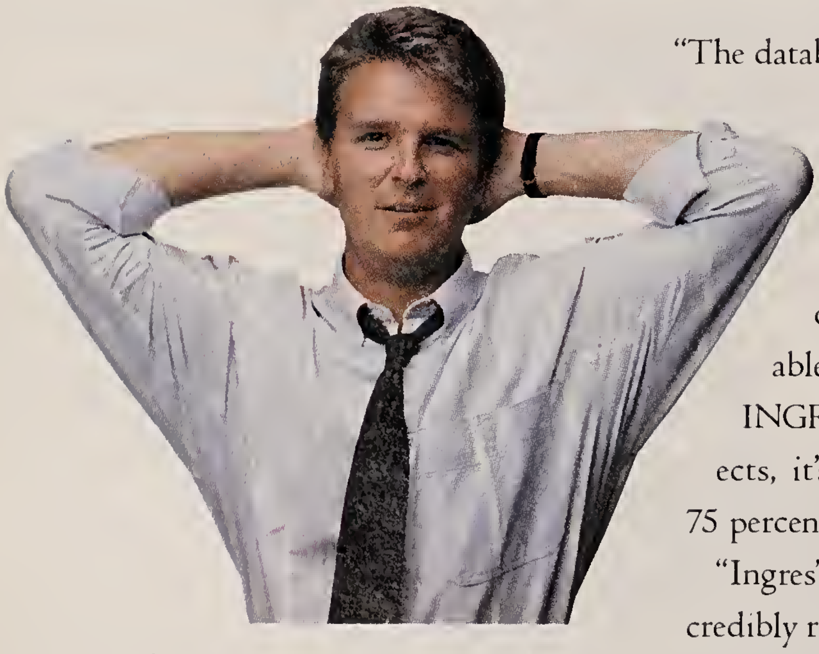

Anders Nicolausson, National Systems Manager, Construction Market Data, Inc., 250 employees in 15 U.S. offices.

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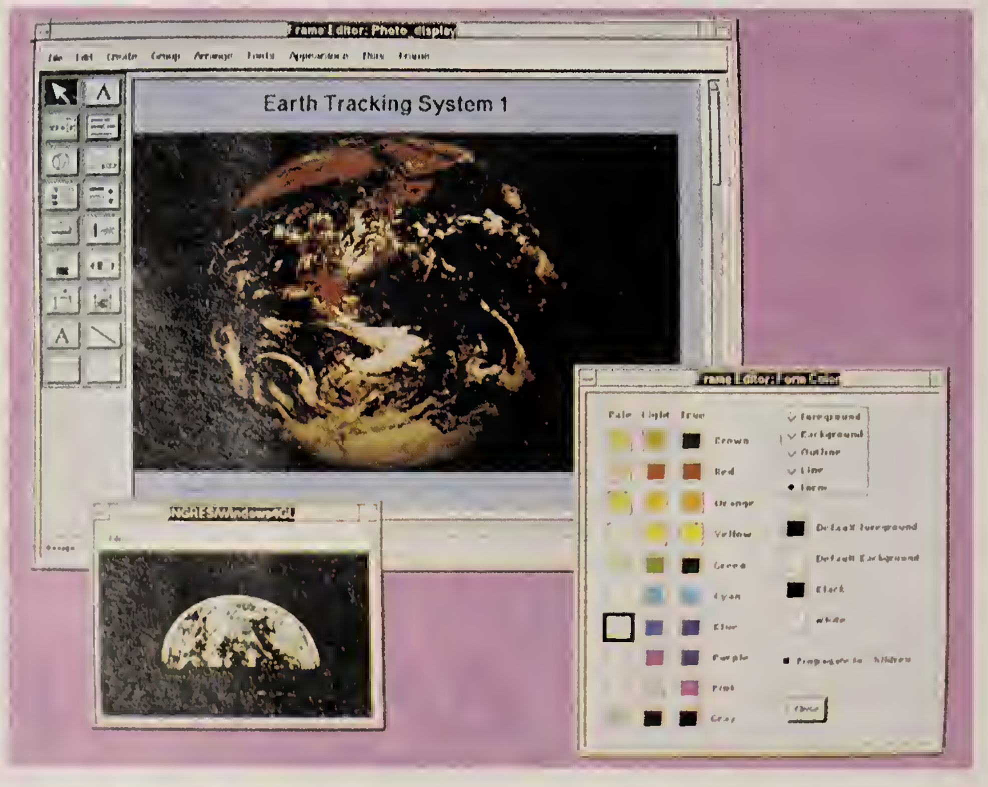

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1985	First RDBMS-4GL integration
1986	First database gateway
1987	First transparent distributed RDBMS
1988	First UNIX DBMS to break 100 TPS
1989	First intelligent database, object support
1990	First RDBMS with automatic two-phase commit
1990	First RDBMS-graphical, OO 4GL integration
1991	First production-quality 4GL generator
1991	First SQL-based event alerters

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Carrying the load

Airline loads up on Mac system

By James Daly
DALLAS

Ever wonder how an airplane gets and stays up in the wild blue yonder? In addition to some elementary rules of physics and rocket-like engines, it also depends on a tricky internal balancing act called load balancing.

The success of any flight is dependent on an adequate load plan, a critical guide that instructs the ground crew how to load freight around the plane's center of gravity so that the aircraft will fly efficiently and safely.

Load planning on a major airline is a complicated process that can take up to six hours and often involves numerous ground personnel, more than 100 load agents and sophisticated computer systems. Multiply that single flight by the more than 2,300 domestic and international flights flown by American Airlines every day and you are talking a serious logistical challenge.

Although it is still a complicated matter, load planning has gotten a little easier for American. At its System Operations Control (SOC) Cen-

Airline, *page 41*

ON SITE

American Airlines
Dallas

Challenge: To efficiently manage the aircraft load planning process.

Technology: Expert system running on Apple's Macintosh and developed using Neuron Data's Nexpert.

Results: Increased load planning capacity by 300 flights in six months without adding load planning staff.

IBM values ValuePoint

PC line means more orders, satisfied customers for Big Blue

By Michael Fitzgerald
WHITE PLAINS, N.Y.

■ While IBM PC Co.'s ValuePoint announcement pales in comparison to Compaq Computer Corp.'s record-shattering Prolinea debut, it has nonetheless managed to give IBM a needed boost in orders and in visibility with customers.

ValuePoint has clearly opened doors previously closed to IBM because of the company's historically high prices. One such site is Midas International Corp. in Chicago.

"We haven't used any IBM PCs for a long time, but we are looking seriously at ValuePoint," said Ashvin D. Dave, director of systems and operations at Midas.

ValuePoint has generated an uptick in orders. Recent research by WorkGroup Technologies, Inc. in Hampton, N.H., showed that IBM orders through dealers are up 17% since ValuePoint was announced.

"IBM has seen nearly a 20% increase in orders since ValuePoint was announced, and that's not bad at all," said John Dunkle, WorkGroup Technologies' president.

Yet while ValuePoint has halted a steady IBM decline, it has not given IBM the same jump in the sales cardiogram that Prolinea gave Compaq.

"Prolinea is probably one of the best-orchestrated launches that we've seen for a while, and they coupled it with such dramatic price drops that it would be hard to match that kind of single impact," said Dan Ness Jr., an analyst at Computer Intelligence in La Jolla, Calif.

Frenzied fall season

Ness said IBM has made such a dizzying flurry of announcements this fall that "I don't even know if people realize how much they've done. It's the difference between a thunderstorm and a long season of showers," he added.

But while the Prolinea/DeskPro I announcement had greater impact, "ValuePoint . . . has exacerbated the price wars, and I think it's going to have a corrosive effect on the market over time," said Bruce Stephen, an analyst at International Data Corp. in Framingham, Mass.

Computer Intelligence's user surveys show that ValuePoint has helped IBM halt a long-term decline in market share. Ness said he expects to see the company hold flat this period, the first such two-month blip in more than a year.

In part because of a burst in customer interest, resellers expressed little concern that ValuePoint has not had the same dramatic sales pop as the Compaq products did.

"I don't know how you can compare [the two]. Compaq was the first guy in, and no one expected Compaq to be that aggresssive [on pricing], while IBM's was pretty well preannounced," said William Tauscher, chairman and chief executive officer of ComputerLand Corp. in Pleasanton, Calif.

Coming back

Still, Tauscher and other resellers said they have witnessed a strong boost in interest for IBM, thanks to ValuePoint.

"I've been amazed, actually — we had to move away from [IBM] because of their pricing, and now with the three-year warranty [on Personal System/2s] and the 24-hour Helpware line and ValuePoint, we definitely see a resurgence" of interest, said Edward Phelan, president of Connecting Point of Boulder in Boulder, Colo.

Low-cost lines appear to be in vogue, as Dell Computer Corp. and AST Research, Inc. have both experienced big volume increases driven by low-cost lines. Apple Computer, Inc., the first major PC vendor to take the plunge into low pricing, started things off with its Macintosh Classic line.

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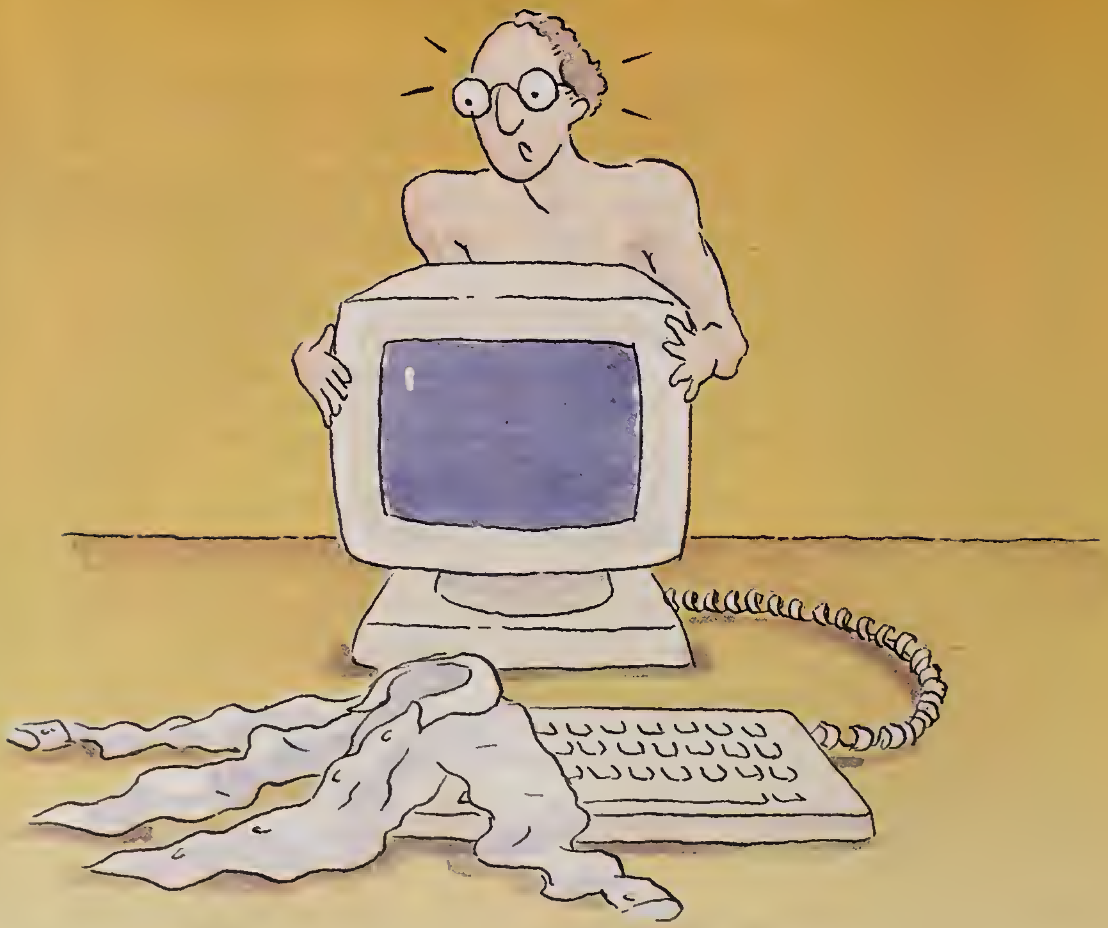

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Acrobat eases file transfer

By Christopher Lindquist

Transferring files between different computing platforms is not so tough, right? Convert all those documents to ASCII and they will work fine. Of course, seeing your document as plain text on a Macintosh after you spent hours making it picture-perfect on your PC is aggravating at best. And what about those graphics?

Adobe Systems, Inc. hopes it has the answer. As a side benefit, Adobe hopes to save some trees as well.

The technology, called Acrobat, previously code-named Carousel, allows for cross-platform transfers of documents, including text, graphics and font information. The documents could be viewed, not edited, using an Adobe Viewer on Unix, DOS, Microsoft Corp.'s Windows or Apple Computer, Inc. Macintosh systems. For example, a company newsletter could be distributed over a network and seen in the same form by engineers on Unix workstations, Macintosh users in the art department and accountants on PCs.

What lies behind the technology is a new, transportable file format called the Portable Document Format.

Significant development

"I think it has a lot of significance," said Tim Bajarin, president of Creative Strategies Research International, Inc. in Santa Clara, Calif. "It will eventually be that critical factor that allows us to transfer files between computers over long distances." Bajarin noted that Adobe's ability to leverage the de facto PostScript page description language gives it an advantage over other document-oriented companies that may be contemplating a similar document interchange strategy. That, in turn, could translate into industry acceptance, both by software vendors and users. "Eventually, it will probably permeate through the entire industry," he added.

What lies behind the technology is a new, transportable file format called the Portable Document Format (PDF). PDF files are created by intercepting and "distilling" PostScript files before they are sent to a file or the printer. Because PostScript is used by thousands of applications on several platforms, creating the PDF files would require a transparent step in the document creation process. And once it is in PDF format, the file could be transferred to anyone with a viewer on any system.

The benefit is that documents that at one time would have needed to be printed, copied and distributed could now be stored and viewed electronically and printed only as needed, saving paper, money and trees. "We need to stop thinking of computers as paper producers," said John E. Warnock, chairman and chief executive officer at Adobe. Today, "all applications are dedicated to producing paper."

Warnock also noted that studies have shown that if paper use continues to climb at its current rate, it will only be a matter of a few decades before there are simply no trees. "If you follow the curve, you run out of trees," he said. "You have to change. There's no option."

The first stage of Acrobat's release, due sometime next year, will consist of a PDF Writer, an Acrobat Distiller for collecting document information and a Viewer. The first platforms to be supported will include DOS, Windows, Unix and the Macintosh, with OS/2 support coming shortly thereafter.

Later stages of Acrobat are expected to include text searching, character recognition and editing capabilities, as well as video, sound and document-management features.

Airline loads up on Mac system

CONTINUED FROM PAGE 39

ter near the Dallas/Fort Worth airport, American's Assistant Load Planner (AALP) has taken over a significant portion of the process. Perhaps more importantly, the 18-month-old Apple Computer, Inc. Macintosh-based setup has become another shining example of how knowledge-based systems are being effectively applied to mainstream business problems.

It has given the airline an important tool for expanding service and staying competitive, allowing it to increase its load planning capacity by 300 flights in only six months without increasing staff. The result is that "we've been able to off-load about 30% of the load planning task onto AALP," said Lynden Tennison, managing director of the knowledge systems group.

Today, AALP handles much of the scut work that forms the initial part of the load planning process. In that first step, a week's worth of historical data on past flights in a particular route is downloaded from a mainframe host in Tulsa, Okla. This information includes averages for the number of passengers as well as freight, baggage and mail weights and is compared with data for the upcoming flight.

Then, the knowledge base provides recommendations for the selection of the runways, as well as a forecast of the takeoff temperature. Aircraft flap settings and load distribution are also entered into the system. With this information, the knowledge base provides the optimal plan for the distribution of the baggage, freight and mail.

Before AALP, Tennison said, agents were spending a third of their time in this initial decision-making process, so the airline decided to build a tool to automate this process.

Flying high

Key goals for American's Assistant Load Planner project:

- Help to ensure safe, efficient operation of flights.
- Improve productivity of load planning staff.
- Add consistency to load planning function.
- Decrease costs through improved fuel burn rates.

Tennison's staff developed the system using Neuron Data, Inc.'s Nexpert Object. The Macintosh was chosen because "its graphical interface is so well-suited to the kinds of tasks we have to do," Tennison said.

Until AALP's implementation, the 325 Macintoshes in the SOC were primarily used for terminal emulation to the mainframe host. Tennison said his staff also needed a development tool that could be easily integrated with SuperCard and C because those were the supporting languages in the graphical user interface and communications functions.

The AALP display also provides an agent with a graphical representation of the current load plan that offers a valuable mental picture of the baggage storage.

The scheduling knowledge base also contains a record of every flight and its departure time and triggers a 60-rule knowledge base into action four hours before each flight. For example, Flight 1236 might be scheduled to depart from Chicago's O'Hare Airport at 2:04 p.m. At 10:04 a.m., the knowledge base automatically accesses the mainframe host. AALP then determines the average mail, baggage and freight loads from past instances of Flight 1236 as well as passenger booking, current weather information and the type of aircraft assigned to the upcoming flight. The system then plans the distribution.

Up until flight time, load agents access and revise the plan with information such as updated fuel figures and changes in weather conditions. Within an hour of takeoff, the plan is sent to baggage handlers for loading. Finally, a radio close-out of the plan is dispatched to the cockpit just minutes after the aircraft is backed off the gate.

Commentary

Paul Gillin

Comdex cliches

"So, how was Comdex?"

If you're as tired as I am of that question, perhaps you'll sympathize with some of the other favorite frustrations of this frequent show goer.

In other words, I'm going to scream the next time:

I see a keynote session used by some vendor CEO to demo his products. Bill Gates and Philippe Kahn both did it this year, though Kahn had the good taste not to *say* they were his products. Come to think of it, I think I'm going to scream next time Gates or Kahn gives a keynote address. Anywhere.

I see a boothful of IBMers dressed in matching golf shirts. Has this become the blue pinstriped suit of the '90s?

I hear someone accuse Microsoft of being a proprietary standards company just because it doesn't favor the proprietary standards that everybody else who is against Microsoft favors.

I have to wait in a cab line.

Someone tells me how crowded his flight was.

Someone tells me how late his flight was.

Someone tells me how cheesy his hotel is.

Someone tells me how late he was up last night.

Some vendor tells me it's targeting the corporate market. My favorite corporate market-seeker this year was the guy with the Windows utility that makes screaming and crashing noises when you click on icons. Corporate America is holding its breath for this breakthrough.

I hear some consultant say IS departments should be more in tune with the business. People get paid to say that. Really.

I see someone use Elvis to sell PCs. (Conversely, I'd love to see someone use Monty Python to sell PCs.)

I hear someone say Windows NT is "solid." If it's so solid, why isn't it available?

I hear someone ask, "So, how's the show for you?"

A vendor says, "You mean you've never heard of us?" with the same righteous indignation as if I had just insulted his mother.

Some vendor says it'll be shipping its product by late December. Why is it that with all the work being done all over the industry, everything just barely squeaks out the door by late December?

I hear a vendor tell users what they want. Shouldn't it be the other way around?

I hear something described as a "paradigm shift." My paradigms have shifted so many times I need new glasses.

A vendor describes itself as "the best kept secret in the industry."

A cabbie asks, "So, you in computers?"

I hear a speaker say business is going to be more competitive in the '90s. If you don't think that, you're probably looking for a job right now.

I hear a speaker say IS people live in the glasshouse or are mainframe bigots. C'mon, the early '80s are over.

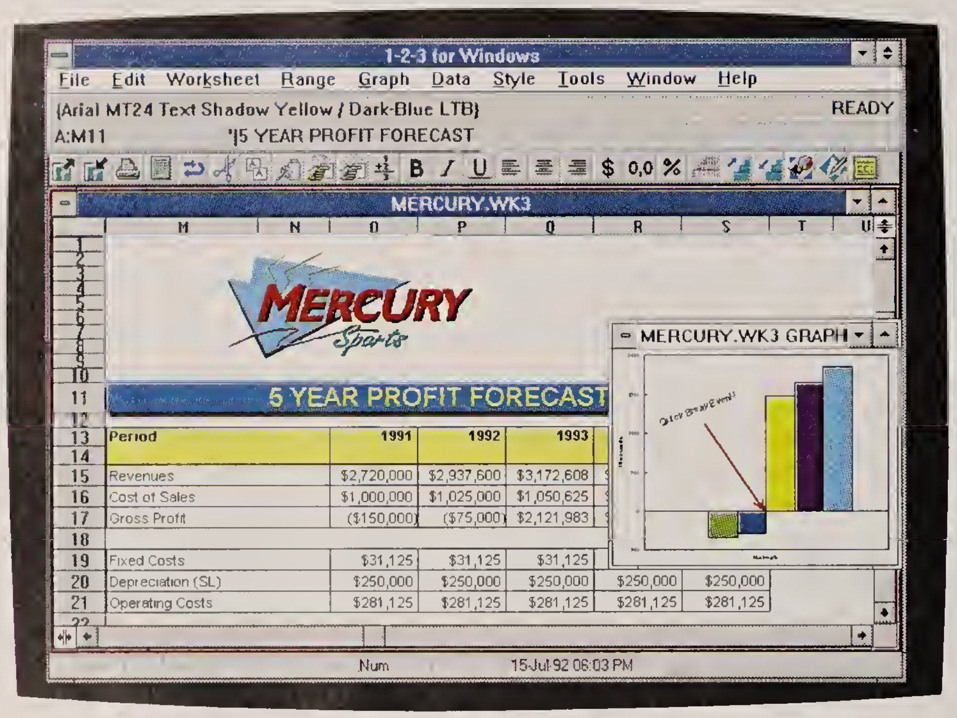
I have to go to Comdex.

On the other hand, all things considered, I'd hate to miss it.

Gillin is *Computerworld*'s executive editor.

Compared to Lo

Microsoft Office look



1-2-3 for Windows

File Edit Worksheet Range Graph Data Style Tools Window Help

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A:M11 '5 YEAR PROFIT FORECAST

MERCURY.WK3

5 YEAR PROFIT FORECAST

Period	1991	1992	1993		
Revenues	$2,720,000	$2,937,600	$3,172,608		
Cost of Sales	$1,000,000	$1,025,000	$1,050,625		
Gross Profit	($150,000)	($75,000)	$2,121,983		
Fixed Costs	$31,125	$31,125	$31,125		
Depreciation (SL)	$250,000	$250,000	$250,000	$250,000	$250,000
Operating Costs	$281,125	$281,125	$281,125	$281,125	$281,125

MERCURY.WK3 GRAPH

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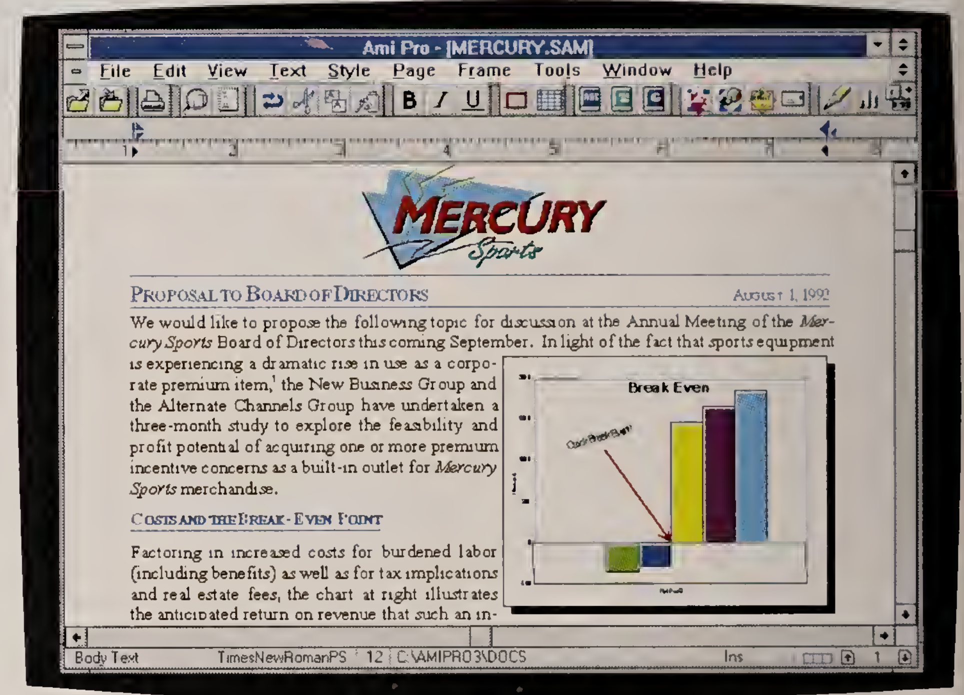
1-2-3 for Windows Release 1.1 now includes over 25 new features and usability enhancements.



Ami Pro - [MERCURY.SAM]

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PROPOSAL TO BOARD OF DIRECTORS August 1, 1992

We would like to propose the following topic for discussion at the Annual Meeting of the *Mercury Sports* Board of Directors this coming September. In light of the fact that sports equipment is experiencing a dramatic rise in use as a corporate premium item,[1] the New Business Group and the Alternate Channels Group have undertaken a three-month study to explore the feasibility and profit potential of acquiring one or more premium incentive concerns as a built-in outlet for *Mercury Sports* merchandise.

COSTS AND THE BREAK-EVEN POINT

Factoring in increased costs for burdened labor (including benefits) as well as for tax implications and real estate fees, the chart at right illustrates the anticipated return on revenue that such an in-

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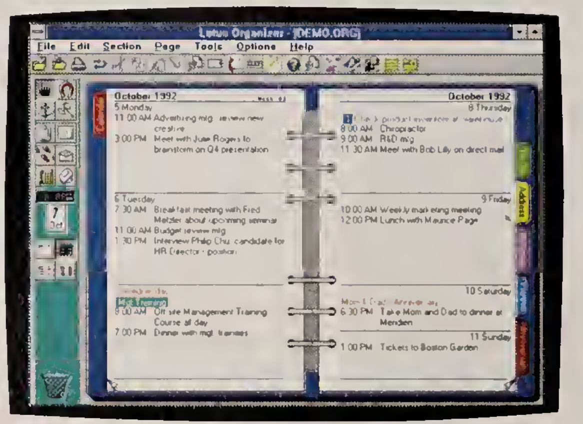

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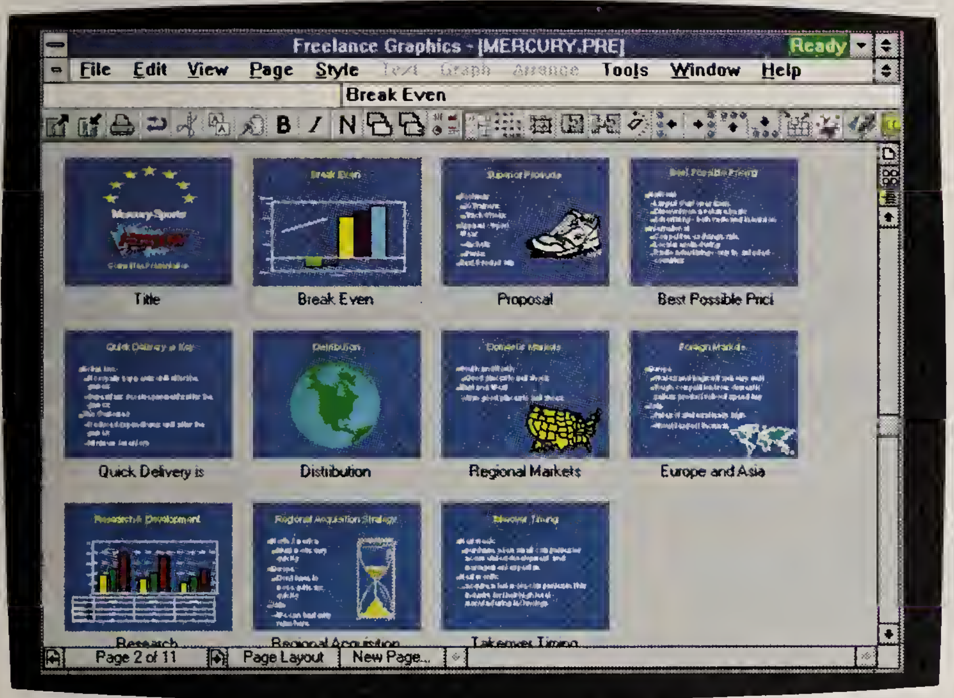

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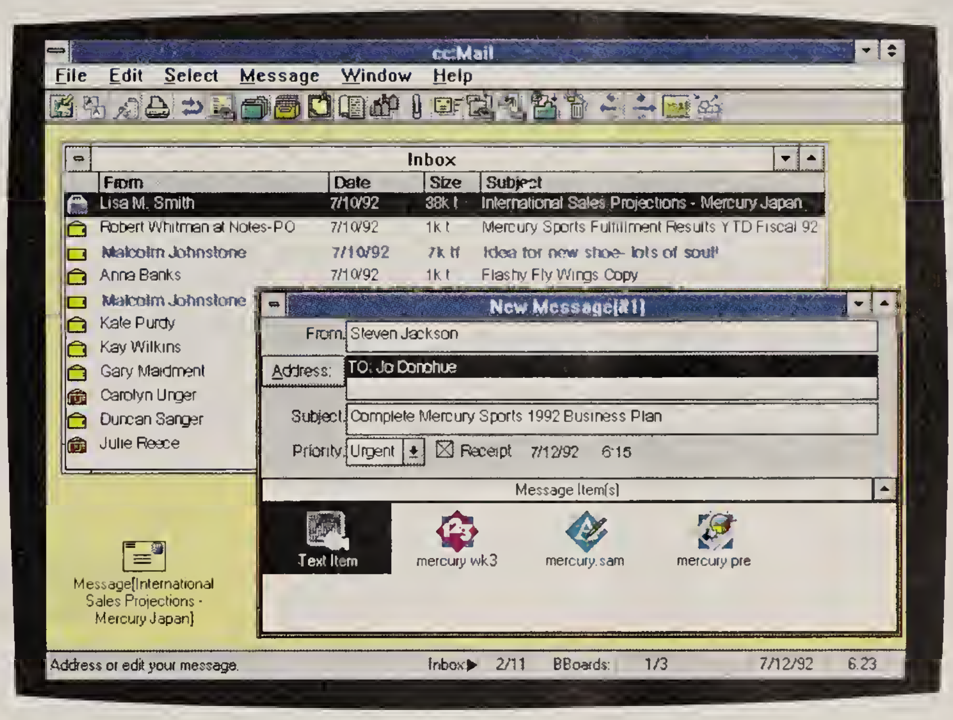
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New Message[#1]
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Message[International Sales Projections - Mercury Japan]

From	Date	Size	Subject
Lisa M. Smith	7/10/92	38k t	International Sales Projections - Mercury Japan
Robert Whitman at Notes-PO	7/10/92	1k t	Mercury Sports Fulfillment Results YTD Fiscal 92
Malcolm Johnstone	7/10/92	7k tf	Idea for new shoe- lots of soul!
Anna Banks	7/10/92	1k t	Flashy Fly Wings Copy
Malcolm Johnstone			
Kate Purdy			
Kay Wilkins			
Gary Maidment			
Carolyn Unger			
Duncan Sanger			
Julie Reece			

From: Steven Jackson
Address: TO: Jo Donohue
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Lotus **SmartSuite for Windows**

1-2-3, Ami Pro, Freelance Graphics, and cc:Mail

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Windows View

Jesse Berst

Embed and conquer

In the last installment, I discussed the TrueType feature of Windows 3.1, its benefits for IS groups and the Font Assistant and Panose type matching in Microsoft's new Font Pack 2.

Now I'd like to alert you to an important but little-known TrueType feature called "embedded fonts." Embedding increases document portability by storing fonts inside a document. When you open that document on another computer, you can view and print the document exactly as it is supposed to look even if the new computer does not already have the correct fonts installed. If there is a problem, it is that embedding will work only if application vendors make use of it.

> For embedding to work, it must be supported by the font vendors and by the applications.

In theory, embedding can solve a problem that hampers many network administrators — namely, making sure every user has access to the same fonts so that documents posted on the network can be viewed, edited and printed by anyone. Font embedding means you do not have to purchase and install an identical set of fonts for every computer in the company. It also lets you enforce consistency.

Possible uses

Here are just three of the many possible uses for font embedding:

- Distribute documents that match the corporate identity program.
- Give a professionally designed computer slide presentation to the entire field sales force with confidence that it will display properly on any Windows computer.
- Send brochures to branch offices to be "customized" for local conditions without losing the look you want.

It's up to font vendors to decide what level of embedding to allow. The lowest level is no embedding.

The next highest level is "Preview and Print." Under this option, Windows 3.1 temporarily installs the fonts on the receiving machine. You can preview the document on the screen or print it out. You cannot, however, modify the document. Nor can you use the temporary fonts with any other application.

The next level up is "Editable," which allows you to modify and print the document. This option lets you start a document on one computer and finish it on another. You cannot, however, save the document under a new name or use the fonts in any other document. Closing the document deletes the temporary fonts.

Finally, the highest level is "Installable." When you move the document, Windows automatically installs the fonts on the new computer, where they can be used by other applications. The fonts that ship with Windows 3.1 and with the first Microsoft Font Pack are installable.

Does embedding sound like the solution to some of your document interchange problems? Not so fast. For embedding to work, it must be supported by the font vendors and by the applications.

Most of the hard work falls to the applications developers. They must modify their applications to use font embedding. Unfortunately, Microsoft didn't do a good job of explaining why, when and how to make these modifications. As a result, only a handful of applications can take advantage of font embedding right now.

Things should soon begin to change for the better. For one thing, Microsoft is releasing a Dynamic Link Library (DLL) that handles most of the basic chores (such as deleting the temporary font). Developers can simply link to this DLL so they don't have to write all of the functions themselves.

For another, Microsoft has made embedding more palatable to font vendors. It did not want to support an embedding scheme that would let people have unlimited use of its fonts without paying for them. Microsoft's new "Editable" format lets it provide value to users without giving its fonts away.

So here's my alert to IS professionals and developers: If you want to improve the portability of your documents, start looking for applications that support embedded fonts. And if you are developing custom solutions for documents, you'll want to modify those custom applications to support font embedding.

Berst is the publisher of Redmond, Wash.-based "Windows Watcher" newsletter, a monthly briefing service for software executives and corporate technology managers.

Newton to 'talk' with Hobbit

By David Kellar

TOKYO

Apple Computer, Inc. is working to ensure that the fax, modem and phone functions of its Newton personal digital assistant are compatible with wireless communicators based on AT&T Microelectronics' Hobbit chip set, said Apple Senior Vice President David Nagel at the recent Multimedia '92 show.

Though design and functionality will differentiate Newton from Hobbit-based units such as EO, Inc.'s recently announced Personal Communicator, it will be difficult to attract users unless Newton offers standard communications functions and data exchange compatibility, Nagel said.

This compatibility will be offered through the use of standard file formats and common transmission frequencies, said Frederick Bullock, market development manager at Apple Pacific. "We are currently talking with McCaw Cellular Communications, Northern Telecom and other wireless service providers to make sure we have access to frequencies that allow common data exchange."

Apple's Newton will incorporate both infrared and cellular signal transceivers to enable "wireless LAN and wireless WAN" communications functions, Bullock said.

> It will be difficult to attract users unless Newton offers standard communications functions.

The infrared unit will allow a user to automatically update Newton's scheduler and phone directory with data from a PC, while the cellular module will enable wireless fax, modem and phone communications.

Apple's projected release date for the Newton is still "sometime next year" because of the unpredictable nature of software development. "The hardest part of this product is the software," Bullock said, "because we must be sure to provide just the right functionality, intelligence and ease of use, and we must customize functions for each local market."

Several companies are expected to release wireless communicators in 1993. Newton will be marketed by both Apple and development partner Sharp Corp., while EO's Personal Communicator, slated to reach the market in the second quarter, will be sold through AT&T Phone Center stores. NEC Corp. and Toshiba Corp. also announced their plan to develop Hobbit-based products for release next year.

Kellar is a Tokyo correspondent for the IDG News Service.

New Products

Systems

Number Nine Computer Corp. has released the #9GXE graphics board.

The product is the first graphics board to use the 86C928 graphics accelerator chip from S3 Corp. The #9GXE was designed as a graphics solution for graphical user interface and Microsoft Corp. Windows environments.

The range of features includes high-performance Video Graphics Array support and zero-wait state for optimal bus performance. A #9 HawkEye Feature Set comprised of HawkEye's Virtual Resolutions, the HawkEye Zoom, the HawkEye Exchange, the #9 Chameleon Cursor and the #9 Smart Mouse is provided to enhance Windows productivity.

Prices begin at $495.

➤*Number Nine Computer*
18 Hartwell Ave.
Lexington, Mass. 02173
(617) 674-0009

Peripherals

Epson America, Inc. has introduced the FX-870 and FX-1170, enhanced versions of the company's FX-850 and FX-1050 nine-pin printers.

According to the company, the new models operate up to 30% faster than their predecessors and offer additional paper-handling features. The difference between the FX-870 and the FX-1170 is found in the carriage width. The FX-870 is narrow, with 80 columns, and the FX-1170 is wide, with 136 columns. Within SuperDraft mode, both products print up to 380 characters per second; they print 68 characters per second in Near Letter Quality mode.

The FX-870 costs $499; the FX-1170 costs $699.

➤*Epson America*
20770 Madrona Ave.
Torrance, Calif. 90509
(310) 782-0770

Fujitsu Computer Products of America, Inc. has introduced the PrintPartner 10W and the PrintPartner 10 laser printers.

The PrintPartner 10W has an Advanced Micro Devices, Inc. 2900 15-MHz reduced instruction set computing processor and is optimized for Microsoft Corp.'s Windows 3.1 environment. Features include 35 TrueType outline fonts directly embedded in the printer and Microsoft's TrueImage page description language.

Both printers offer multiple types of connectivity as well as serial and parallel ports. For Macintosh connectivity, the 10W has an Apple Computer, Inc. AppleTalk port.

PrintPartner 10 costs $1,995, while the 10W costs $2,450.

➤*Fujitsu Computer Products of America*
2904 Orchard Pkwy.
San Jose, Calif. 95134
(408) 432-6333

Fax

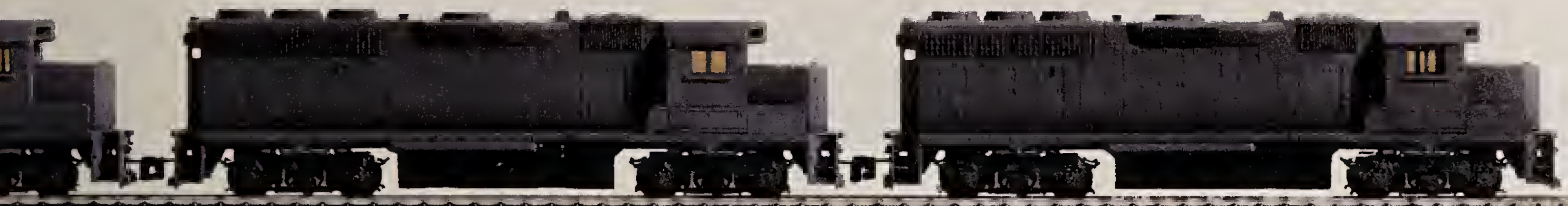
TGI Technologies Ltd. has released Version 1.6 of SCI NET 2000, a multiline fax management system for Novell, Inc. networks.

SCI NET 2000 allows an unlimited number of users to send fax messages directly from their Microsoft Corp. Windows applications and from DOS applications. Notification of sent or received fax messages is instantly made via Novell's messaging service feature. The system also offers a new fax broadcast feature that enables a user to send a document to 5,000 destinations.

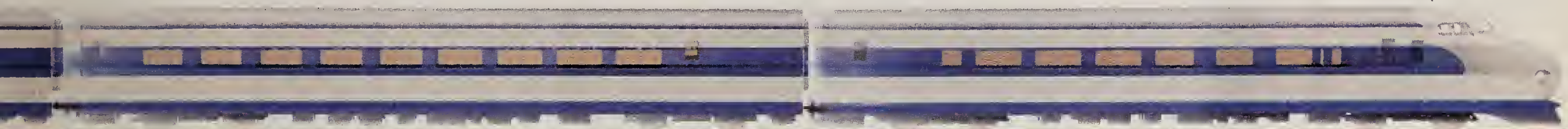
SCI NET 2000 costs $995.

➤*TGI Technologies*
107 E. 3rd Ave.
Vancouver, British Columbia
Canada V5T 1C7
(604) 872-6676

Why combine a number of SPARCstations,



when a network of HP workstations and X stations operates for less?



It just stands to reason. The more engines, the more cost. Not only in initial purchase price, but system administration, backups and OS updates. That's why more and more people are getting on board with an HP workstation/X station network. A powerful engine that carries plenty of passengers.

At Hewlett-Packard, we understand that not every situation requires a workstation. A network of our Series 700 workstations and 700/RX X stations can give users full PA-RISC workstation functionality and HP's industry-leading speed at a fraction of the cost of a Sun SPARCstation network. And as your operation grows, workstations can be upgraded and X stations easily added.

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To get on board, call 1-800-637-7740, Ext. 7098. In Canada, call 1-800-387-3867, Dept. 2308.

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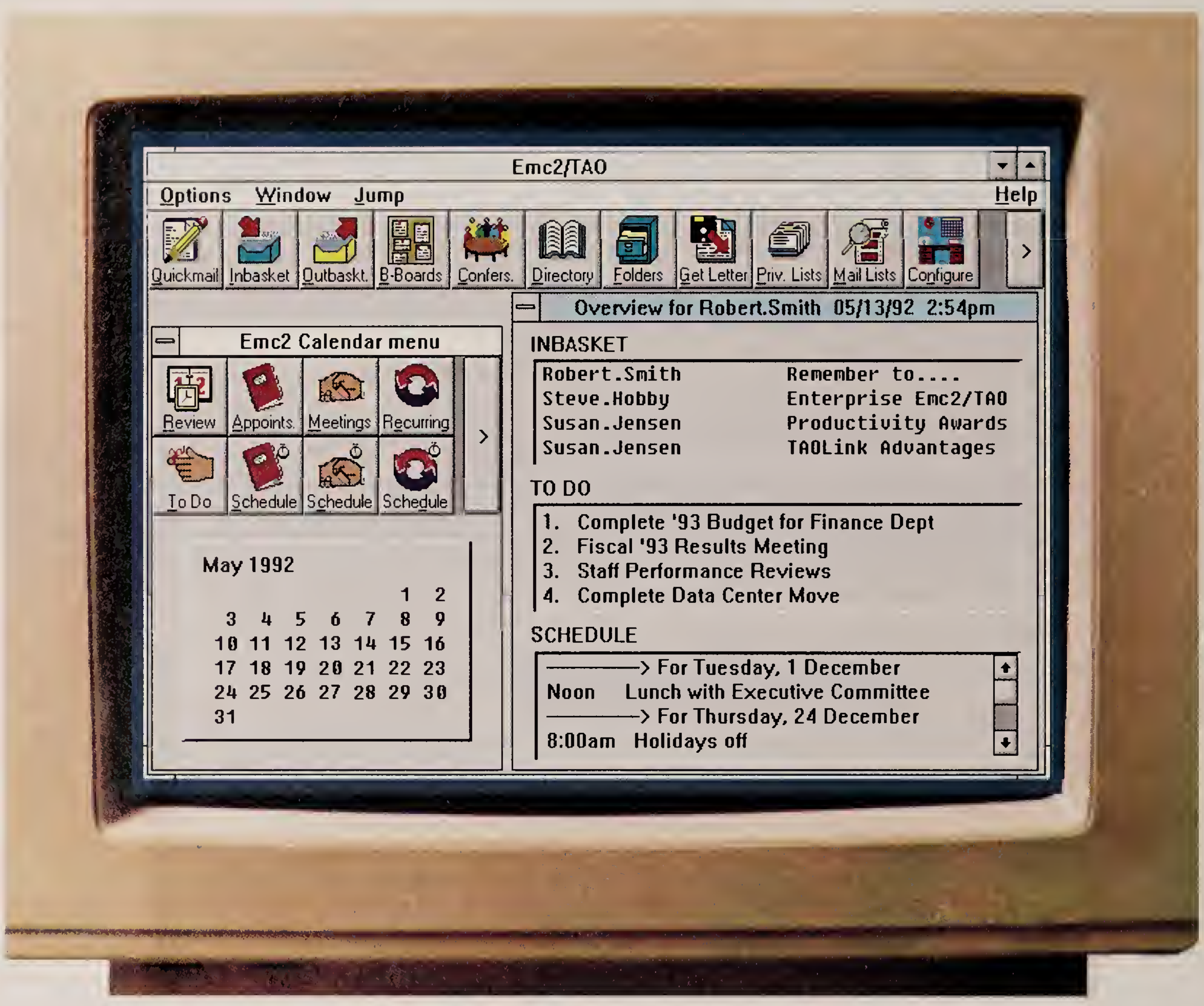
E-Mail For Both Mainframe And LAN Is A Huge Headache…



Overview for Robert.Smith 05/13/92 2:54pm

INBASKET

Robert.Smith	Remember to....
Steve.Hobby	Enterprise Emc2/TAO
Susan.Jensen	Productivity Awards
Susan.Jensen	TAOLink Advantages

TO DO

1. Complete '93 Budget for Finance Dept
2. Fiscal '93 Results Meeting
3. Staff Performance Reviews
4. Complete Data Center Move

SCHEDULE

———> For Tuesday, 1 December
Noon Lunch with Executive Committee
———> For Thursday, 24 December
8:00am Holidays off

May 1992

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CA begins work on E-mail software for local-area networks

By Rosemary Cafasso

Computer Associates International, Inc. said it is not interested in jumping on the workgroup computing bandwagon, but it does have workgroup-related projects under way.

A contradiction? Not so, said Marc Sokol, CA's director of product strategy.

"The workgroup term is overused," Sokol said. "These days, anything on a network is considered workgroup. We don't see workgroup as a [separate] strategy. We see it as a component of our other strategies," which include system management software, microcomputer software and application development.

David Marshak, an analyst at the Patricia Seybold Group in Boston, said the CA strategy makes more sense than charging into the market with a workgroup product line.

"It's a difficult game to break into now because you have to position against Notes," Marshak said.

"For a company like CA, the approach sounds correct," he added.

LAN version for E-mail

Nonetheless, CA is working on a local-area network version of its mainframe-based electronic-mail software.

CA-E-mail LAN should be shipping by mid-1993 and will be targeted at its installed base of mainframe E-mail users, Sokol said. As a result, CA-E-mail LAN will not be sold through the retail channel.

"We will not go head-to-head with CC:Mail" from Lotus Development Corp., Sokol said of the leading LAN E-mail package.

Resorts tee off with server-based reservation system

By Maryfran Johnson
MYRTLE BEACH, S.C.

Tangled tee times and cranky golfers rank among the top nightmares of the hoteliers and golf course owners along the Carolina coast's Grand Strand resort area.

This sun-soaked, 80-mile stretch of the North and South Carolina coastline plays host to an estimated 2.7 million rounds of golf each year, which pumps tourist revenue of roughly $350 million into the local economy.

What better place, then, for the world's largest computerized tee-time reservation system?

24-hour service

"We've got 45 courses and 17 hotels hooked up to the system now," said George Hilliard, general manager of the Grand Strand Tee-Time Network, which is run by the Grand Strand Executive Golf Association. "The hotels can provide much quicker service to their guests and make tee-time reservations around the clock now."

PAM PRESTON

Golfing *in North and South Carolina accounts for approximately $350 million a year in revenue*

The technology behind the Grand Strand network, which made its debut last spring, is an IBM RISC System/6000 Model 950 server running a customized reservation system designed by Aptech Computer Systems, Inc. in Pittsburgh.

The network was built to the specifications of the golf courses and hotels at a shared cost of "well over $1 million," Hilliard said.

Annual membership fees from the golf association help maintain the system, which relies on a single, on-site systems administrator and Wheeler Computer Services in Myrtle Beach for technical upkeep.

There is also room for growth on the Model 950, which could eventually accommodate 75 golf courses and 50 hotels.

Challenging setup

Setting up the telecommunications portion of the network was especially challenging because each hotel and golf course had to tap into the RS/6000 with its own IBM PC or clone machine, ASCII terminals and printers. In one case, a connection had to be established for an old IBM System/36 machine.

"This is a new arena for computer advances," said Paul Veltri, marketing manager for the Tee-Time Reservation program at Aptech. "It's pretty much been a pencil-and-paper operation in

Resorts, *page 49*

ON SITE

Grand Strand Executive Golf Association
Myrtle Beach, S.C.

Challenge: To manage tee times for rounds of golf at 45 courses.

Technology: IBM RS/6000 Model 950 running a customized reservation system designed by Aptech Computer Systems.

Results: Hotel guests can schedule an entire week of golf on a computer screen with a two-second response time instead of having hotels make 15 to 20 phone calls.

By the end of this week Computerworld readers will have spent over $74.7 Billion on Information Technology this year – representing nearly half of all IT spending to date in 1992.

COMPUTERWORLD
The Newspaper of IS

Source: IDG Research Services, Fall 1991

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If your custom application wins, you'll join Bill Gates at an awards ceremony and private reception in your honor.

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We're looking for innovative applications made possible by you and Windows. For instance, maybe you created an executive information system, or a field sales office reporting system, perhaps you downsized a host application, or wrote a mainframe-to-micro user access system.

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Do you have the Qualifications?

Your entry should be a custom program currently in use (not a prototype), and not for resale.

It should also be either an entirely new application, a modification of an off-the-shelf application, or a Windows front-end for a host application. And of course, it should require Windows.

Entries will be accepted in the following eight industry categories: 1) Manufacturing, 2) Finance, 3) Insurance/Real Estate, 4) Transportation/Communications/ Utilities, 5) Services/ Professions, 6) Wholesale/ Retail/Distribution, 7) Government/Public Administration, and 8) Other.

Call for Entry.

Just call the WINDOWS WORLD Open Hotline toll-free at 1-800-829-4143, or 1-206-443-3329 to request your official WINDOWS WORLD Open entry kit.*

The deadline for entry is Midnight, February 15th, 1993.

But hurry. The first 200 entries receive a free WINDOWS WORLD Open T-Shirt.

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*The WINDOWS WORLD Open Entry Kit contains all details, rules and qualifications for this contest. Contest is void where prohibited by law. No purchase necessary.

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COMPUTERWORLD

PC pricing could spur shakeout

Microsoft seeks to prove NT's viability

Borland grazes through Windows at IS

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Microsoft announces plans for Windows NT on shop floor

By Ellis Booker
DETROIT

Mice, trackballs and windowing operating systems have been common enough on the desks of industrial engineers for years. The change is that increasingly powerful PC hardware and standard operating systems are poised to make significant inroads in this once specialized, high-end marketplace.

At the giant Autofact Exhibition and Conference here earlier this month, none other than Microsoft Corp. was pushing its Windows NT-based operating system as a manufacturing platform.

On hand with Microsoft were a number of independent software vendors demonstrating mechanical engineering and design products that use the 32-bit version of Windows. For example, Intergraph Corp. announced that Version 5 of its widely used MicroStation product would be released for NT in the second quarter.

Intergraph was one of more than a dozen developers announcing their commitment to provide Windows NT-based products in 1993.

From a manufacturing perspective, the new products will take advantage of several new capabilities in Windows NT, not the least of which is its built-in support for Transmission Control Protocol/Internet Protocol.

"What's happening is a lot of software has been custom-made for particular environments, and we're seeing it being replaced with modular, more user-friendly systems," said Aleda V. Roth, an associate professor at the Fuqua School of Business at Duke University in Durham, N.C.

Intergraph announced its commitment to provide Windows NT-based products in 1993.

Roth said this trend is especially evident on the shop floor, where less technically proficient workers are being expected to do more. "Now, less technically skilled people can use computers [to full advantage]," she said.

Making a move

Another indication of this trend was a statement of direction by Autodesk, Inc. that it planned to leverage its position as the leading provider of desktop computer-aided design (CAD) software toward high-end products capable of [addressing] the entire design-to-manufacturing process."

Sausalito, Calif.-based Autodesk said it planned to realize this strategy by internal research and development and technology acquisitions and partnerships. Indeed, at Autofact, the firm announced an agreement with Integrated Industrial Information, Inc. in Raleigh, N.C., to develop and distribute large mainframe-compatible desktop CAD products.

Computervision Corp. demonstrated 18 design and manufacturing packages, including an NT version of its DesignView parametric engineering product, which Computervision said is now available.

Other Computervision products are expected to be made available in 1993.

Still, PCs are not up to some manufacturing tasks, which still demand the very top-of-the-line hardware and software. At Autofact, as in past years, it was left to companies such as Cray Research, Inc. and Sequent Computer Systems, Inc. to show the latest in photorealistic simulation and complex mechanical analysis tools.

Syntax to resell LAN Workplace for DOS

Will add Novell product to TotalNet line of networking software

By Lynda Radosevich
FEDERAL WAY, WASH.

Syntax, Inc. has announced an agreement with Novell, Inc. to resell Novell's LAN Workplace for DOS as part of its TotalNet line of networking software. The company also announced four other additions to the TotalNet line.

Aimed at managers who are trying to network disparate client platforms, the TotalNet products conform to open system standards and can link DOS, OS/2, Unix and Apple Computer, Inc. Macintosh-based workstations to Unix servers.

LAN Workplace for DOS provides DOS and Microsoft Corp.'s Windows users with access to Unix and Novell NetWare-based resources such as file sharing and printing using Transmission Control Protocol/Internet Protocol (TCP/IP). Syntax is packaging the product with its TotalNet for DOS LAN software.

Eight-year-old Syntax offers software that links disparate PC, Unix and Macintosh client platforms to Unix and Novell NetWare servers. The company claims an installed base of 1,000 sites in 500 companies worldwide.

Future plans

In January, the 8-year-old company plans to ship NWserver, server software that enables computers on 30 different Unix platforms to provide file and print services to Novell NetWare clients on an Ethernet network. NetWare users will be able to use the NWserver directories and printers and use the storage space available on the Unix servers.

In December, Syntax is scheduled to release the following:

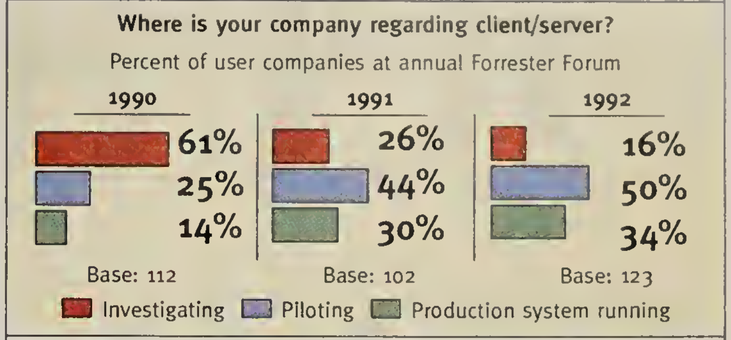
- **TotalAdmin**, software that lets a network administrator manage a group of Syntax servers from one DOS station using normal DOS commands.
- **TotalBackup**, a software program that allows a network administrator to back up any number of DOS clients from the Unix-based Syntax host.
- **TotalMac**, software that enables Unix computers to provide file and print services to Macintosh computers on an Ethernet network.

LAN Workplace for DOS/Windows starts at $295 per site license. A competitive upgrade price from any other TCP/IP product starts at $95 per site license.

NWserver starts at $1,595 for 10 users; TotalAdmin comes with server software starting at $595; TotalBackup starts at $995; TotalMac starts at $795.

Client/Server update

No doubt about it, the shift is on . . .



. . . and the leading operating systems win decisively

Percent of sites
Base: 123 Multiple responses allowed

What will be the dominant client operating system at your company in 1994?	
Windows/DOS	63%
Windows NT	17%
OS/2 2.0	14%
Unix	9%
Macintosh	9%

What will be the dominant server operating system at your company in 1994?	
NetWare	44%
Unix	12%
Windows NT	18%
OS/2 2.0	16%
Other	5%

Source: Forrester Research, Inc.

CW Chart: Michael Siggins

Resorts tee off with server-based system

CONTINUED FROM PAGE 47

the past."

The project got its start in 1989, when complaints about the time-consuming, cumbersome manual reservation system were rising. Hotels trying to book tee times for large groups of golfer guests at local courses found themselves making 15 to 20 phone calls.

Fighting the frustration

Changes and cancellations were an additional frustration, requiring another round of phone calls.

"One of the primary reasons this system was even possible goes back to the cooperation that has made Myrtle Beach successful as a whole," said Matthew Brittain, president of the network's board of directors. "The willingness of competitors to agree to share the cost of a system that would make the golf reservation process much more efficient for everyone was what made it work."

Now, an entire week's golf scheduling can be handled automatically, and response time is guaranteed at two seconds. One computer screen can show all or selected tee times at seven courses for a single day, or seven days at one course — and various other combinations.

Secret schedule

The system's security was an important and sensitive point with the officials of Grand Strand courses, which guard their tee-time sheets from competitive eyes, and the hotels, which are loathe to share customer information. Yet the golf courses and hotels recognized the need to swap certain information.

The problem was solved through additional security measures built into the reservation system application and through some of the security protections already built into IBM's AIX operating system, Veltri said. In addition, a 2.3G-byte disk drive unit on the RS/6000 gives the 60-plus users on the system plenty of storage space.

Veltri noted how quickly the hotels found the system to be a marketing advantage, as they discovered how quickly they were able to book and confirm tee times for incoming guests.

The next step the hotels would like to take, Hilliard said, is to merge the tee-time system with their own reservation systems so guests can book their golf time when they call to reserve a room.

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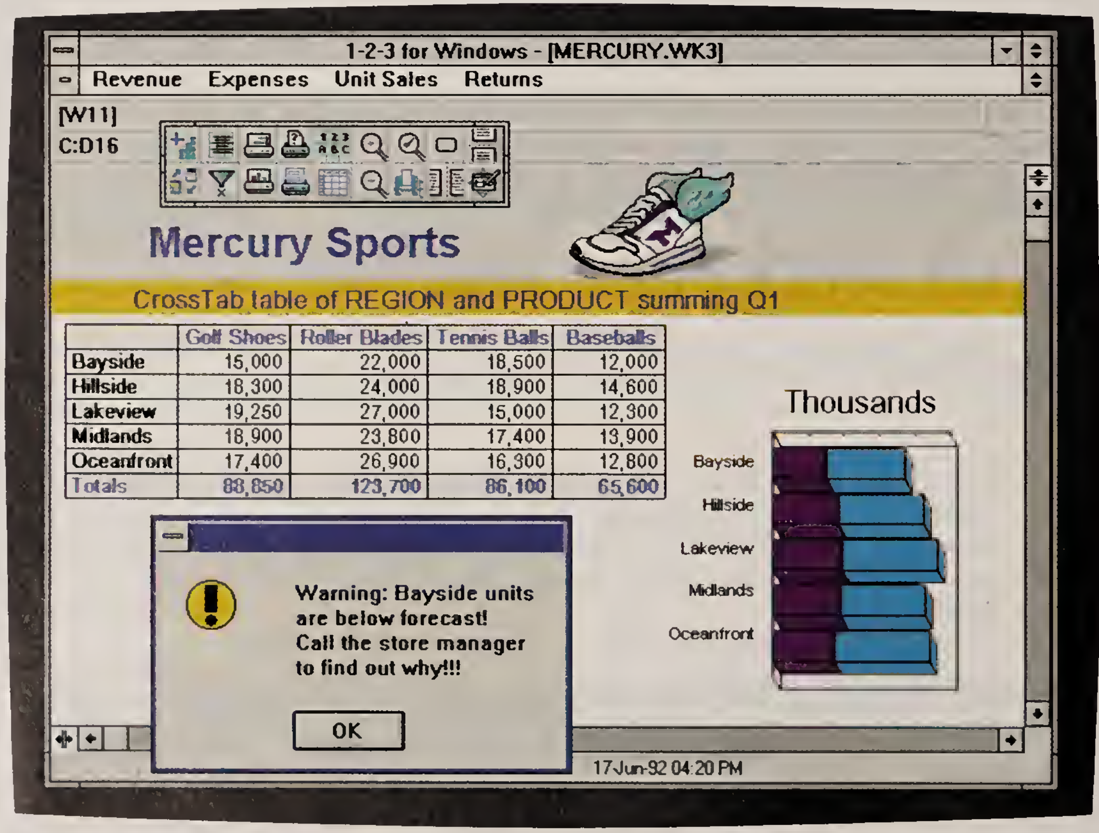
Of course, when you come right down to it, there are plenty of other reasons why 1-2-3 for Windows is the best spreadsheet choice you can make.



CrossTab table of REGION and PRODUCT summing Q1

	Golf Shoes	Roller Blades	Tennis Balls	Baseballs
Bayside	15,000	22,000	18,500	12,000
Hillside	18,300	24,000	18,900	14,600
Lakeview	19,250	27,000	15,000	12,300
Midlands	18,900	23,800	17,400	13,900
Oceanfront	17,400	26,900	16,300	12,800
Totals	88,850	123,700	86,100	65,600

Warning: Bayside units are below forecast! Call the store manager to find out why!!!

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al
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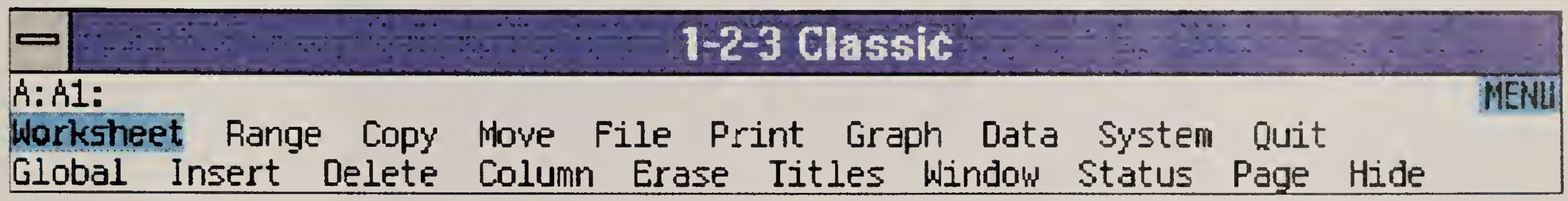
commands whenever you choose. Excel, on the other hand, only supports 80% of 1-2-3 Release 2.01 commands. And has no support for releases beyond.


1-2-3 Classic
A:A1:
MENU
Worksheet Range Copy Move File Print Graph Data System Quit
Global Insert Delete Column Erase Titles Window Status Page Hide

What's more, only 1-2-3 for Windows offers you a better compatibility bridge from DOS to Windows. And unlike Excel, 1-2-3 can read and execute *any* 1-2-3 for DOS file, style and macro.

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Corporate Computing (8/92) wrote that *"for the experienced 1-2-3 database user, 1-2-3 for Windows with DataLens® is the front-end tool of choice."* Excel's data access capabilities rely on a third-party product with limited relational capabilities.

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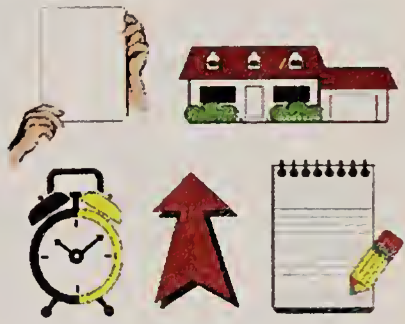

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New Products

LAN hardware

North Hills has introduced three local-area network products in conjunction with IBM.

The NH-CAU 5500 is a Token Ring concentrator designed for up to 80 locally attached devices on 4M and 16M bit/sec. Token Ring LANs.

The NH-CAU 5500 reports to IBM's NetView and Network Manager and supports connections over fiber-optic, shielded and unshielded twisted-pair and coaxial cabling.

Support for 20 shielded twisted-pair workstations or a maximum of 80 connections per Controlled Access Unit (CAU) is provided by the LAC-5501.

The product can be plugged directly into IBM's 8230 CAU or the NH-CAU 5500 and operates with 4M and 16M bit/sec. Token Ring LANs.

Users who want to migrate to Token Ring without pulling new wire can use the LAC-5504, which handles coaxial cabling.

Prices start at $1,650.

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(516) 682-7700

Modems

PSI Integration, Inc. has started shipping the PowerModem III and the PowerModem IV internal fax modems.

The products were designed for Apple Computer, Inc.'s PowerBook 145, 160 and 180 computers. Sending and receiving faxes and data at rates of 9.6K bit/sec., the PowerModem III includes V.32, V.42, V.42 bis and Microcom Networking Protocol 2-10, according to the company.

The PowerModem III's actual data throughput can reach speeds of up to 38.4K bit/sec. with data compression.

The PowerModem IV sends and receives faxes and data at rates of 14.4K bit/sec. and includes V.17, V.32 and V.32 bis. Its actual data throughput can reach speeds of up to 57.6K bit/sec. with data compression.

PowerModem III costs $395, and PowerModem IV costs $495.

➤*PSI Integration*
851 East Hamilton Ave.
Campbell, Calif. 95008
(408) 559-8544

Megahertz Corp. has unveiled two Personal Computer Memory Card International Association (PCMCIA) Notebook fax/modems with XJack for palmtop and PCMCIA 2.0-compliant computers.

XJack is a design developed by Megahertz that provides a fully internal but extendable RJ11 jack on the PCMCIA modem card, the company reported. Available in two credit-card-size versions, the fax/modems are the following: CC2144, a 14.4K bit/sec. data/fax product and the CC224FM, a 2,400/9.6K bit/sec. data fax product.

V.42 advanced error correction and cellular capability are included with both models.

The CC2144 costs $699, and the CC224FM costs $429.

➤*Megahertz*
4505 S. Wasatch Blvd.
Salt Lake City, Utah 84124
(801) 272-6000

Best Data Products, Inc. has introduced the Smart One 1442F internal and 1442FX external V.32 bis ultra-fast fax modems.

The 1442s can accelerate up to 14.4K bit/sec. and incorporate V.42 bis and Microcom Networking Protocol error correction. Data compression protocols deliver a throughput of up to 57.6K bit/sec., the company reported.

The 1442F costs $399, and the 1442FX costs $499.

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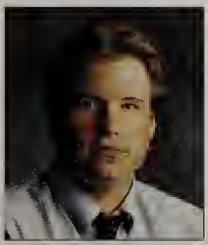
Commentary

David Coursey

E-mail invasion



Wireless E-mail draws attention, as the early users of RAM Mobile Data's Mobitex network have discovered.

Sitting in a Manhattan restaurant typing on a palmtop computer beside a somewhat larger radio·transceiver generally catches a few eyes. Obviously, you are doing something important, but nobody around you can figure out just what it might be.

Eventually someone asks, and I shift into wireless missionary mode. Sometimes I pull out my SkyTel pager and show receive-only messaging before I get to the piece de resistance: full two-way wireless E-mail. "This allows my office to find me wherever I am and lets me respond immediately to their requests," I usually add with a flourish.

About half the time, a wave of recognition washes across the person's face. If not, I can usually guess what the response will be: "But I don't WANT my office to be able to find me!" It's usually said in the manner of a child facing a dose of some foul, red cough elixir.

Office avoidance

That's a logical first response to technology that seems to enhance the invasion of individual privacy and leaves a bad taste in your mouth. After all, who really wants to be required to check their E-mail, say, every hour, 15 hours a day, 365 days a year. It's really not so bad, but it's an acquired taste, so I prefer to turn the argument around: Wireless E-mail allows me a better way to hide from the office.

How many times, for example, have you stayed at your desk waiting for the phone to ring or a piece of E-mail to arrive? How many times have you hooked a portable to a phone line, just to check your mail? Didn't you have better things to do?

If the answer is yes, then wireless E-mail is an important tool for you, cutting the chains that bind businesspeople to desktops, LANs and telephone lines. It is a time compres-

Coursey, *page 58*

Analysis

Internet security risks

By Gary H. Anthes

Despite security and privacy risks, commercial use of the Internet is growing rapidly. However, cautious companies are getting only half a loaf as they try to protect themselves by blocking user access to many Internet resources.

The Internet is a global mosaic of interconnected, multiprotocol networks supporting collaboration in research and education. Data traffic is doubling every six months, and there are now an estimated 7 million Internet users.

The Internet's incredible reach and its wealth of software and information resources — many of them free — are proving irresistible to a growing number of commercial enterprises. Many more would no doubt rush to tap into the network if it were not for the threat of worms, viruses and other mischief.

Data traffic is doubling every six months, and there are now an estimated 7 million Internet users.

"Our management put off connecting to the Internet for years because of security concerns," said an official at a government contractor firm who asked not to be named. Now, the firm routinely communicates with government researchers on the Internet via electronic mail, and it electronically sends documents that were once carried by couriers or the U.S. Postal Service, according to the official.

He said safety is provided by a service from ANS CO+RE Systems, Inc. in Elmsford, N.Y. The service, called InterLock, consists of software running on an IBM RISC System/6000 gateway that controls access to Internet from inside the company and access to the company from Internet. A user-maintained rules base limits traffic going in and out by person, function performed, host, network or time. It can block access to any of the Unix processes often exploited by hackers.

"Internet users fall into a couple of categories," said Stephen Kent, chief scientist at BBN Communications, Inc. in Cambridge, Mass. "Some new users have heard all the bad things that can happen and are therefore appropriately cautious. Others sign up because of the good publicity about connectivity and access to resources and, if they are naive about security, then they are highly vulnerable."

Kent, a privacy and security expert on the Internet Activities Board, said sophisticated Internet users such as IBM, Digital Equipment Corp., Xerox Corp. and AT&T sidestep the security problem by employing mail relays that allow only the movement of E-mail and by blocking file transfers and Telnet sessions that could enable an outsider to log onto an internal host. In so doing, they close the door to much of what the Internet can offer.

"For many users there's a conflict between what they want from a security standpoint and what they want from an information standpoint," Kent said. "We don't have wonderful technical alternatives."

Cautious use

Amoco Corp. has several thousand people worldwide using the Internet for research-oriented purposes, most of it involving E-mail and none of it mission-critical, said David Burns, Transmission Control Protocol/Internet Protocol project leader at Amoco. "We've been moving very carefully, and we're certainly concerned about security and privacy issues."

Burns said Amoco may allow mission-critical communications between Amoco and its suppliers when a new release of ANS' InterLock — which will offer encryption capabilities — comes out next month.

The availability of encryption opens up attractive data communications options for users, Kent said. "If you are a company that's geographically disbursed, you might like to have your branch offices connect to the Internet and form a virtual private network as an alternative to the long-distance carriers."

At a glance

Number of attached hosts: 1.2 million

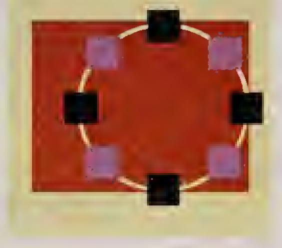
Number of Internet Protocol networks: 7,500

Number of users: 7 million

Number of countries reached: 117

Traffic volume: 100G bytes per day

Traffic volume increase: 15% per month



Commercial naivete

"Commercial users often don't know how to secure a Unix environment," said Dain Gary, operations manager at the Computer Emergency Response Team at Carnegie Mellon University, which deals with breaches of Internet security. "And that problem is compounded by their not really understanding that in the Internet, they're kind of free game."

Gary said new commercial Internet users often mistakenly assume that the network is like their internal environments — ordered and disciplined, with a known set of users, someone in charge and penalties for those who do not obey the rules.

He said another problem is that naive administrators often bring up new Unix systems "with a full complement of vulnerabilities," neglecting to turn off unneeded Unix functions that provide security holes, changing default passwords and the like.

—*Gary H. Anthes*

Chevron bets on APPI protocol for its global internetworking

By Elisabeth Horwitt
SAN FRANCISCO

Chevron Corp. has already decided to use Advanced Peer to Peer Internetworking (APPI) as the basis for integrating local-area network and IBM Systems Network Architecture (SNA) over a single corporatewide internetworking backbone, according to Nancy Vandell, senior communications analyst for network design and services at Chevron Information Technology. What makes this decision something of a leap of faith is the fact that the APPI Forum has only just begun to hammer out the specifications, which will route SNA transmissions over a backbone of Transmission Control Protocol/Internet Protocol (TCP/IP) routers.

Cisco Systems, Inc. proposed APPI this fall as a purportedly more open alternative to IBM's Advanced Peer-to-Peer Networking (APPN) protocol. IBM has been pushing APPN for some months now as a multivendor protocol that will coordinate connections and resource-sharing across a corporatewide network of IBM and non-IBM devices. Any device that supports IBM's LU6.2 or APPN end-node protocols — both publicly available specifications — can access resources on an APPN network.

However, a device needs to support the more sophisticated APPN Network Node protocol in order to be a fully participating member of such internetworks. IBM has promised to pub-

Chevron, *page 62*

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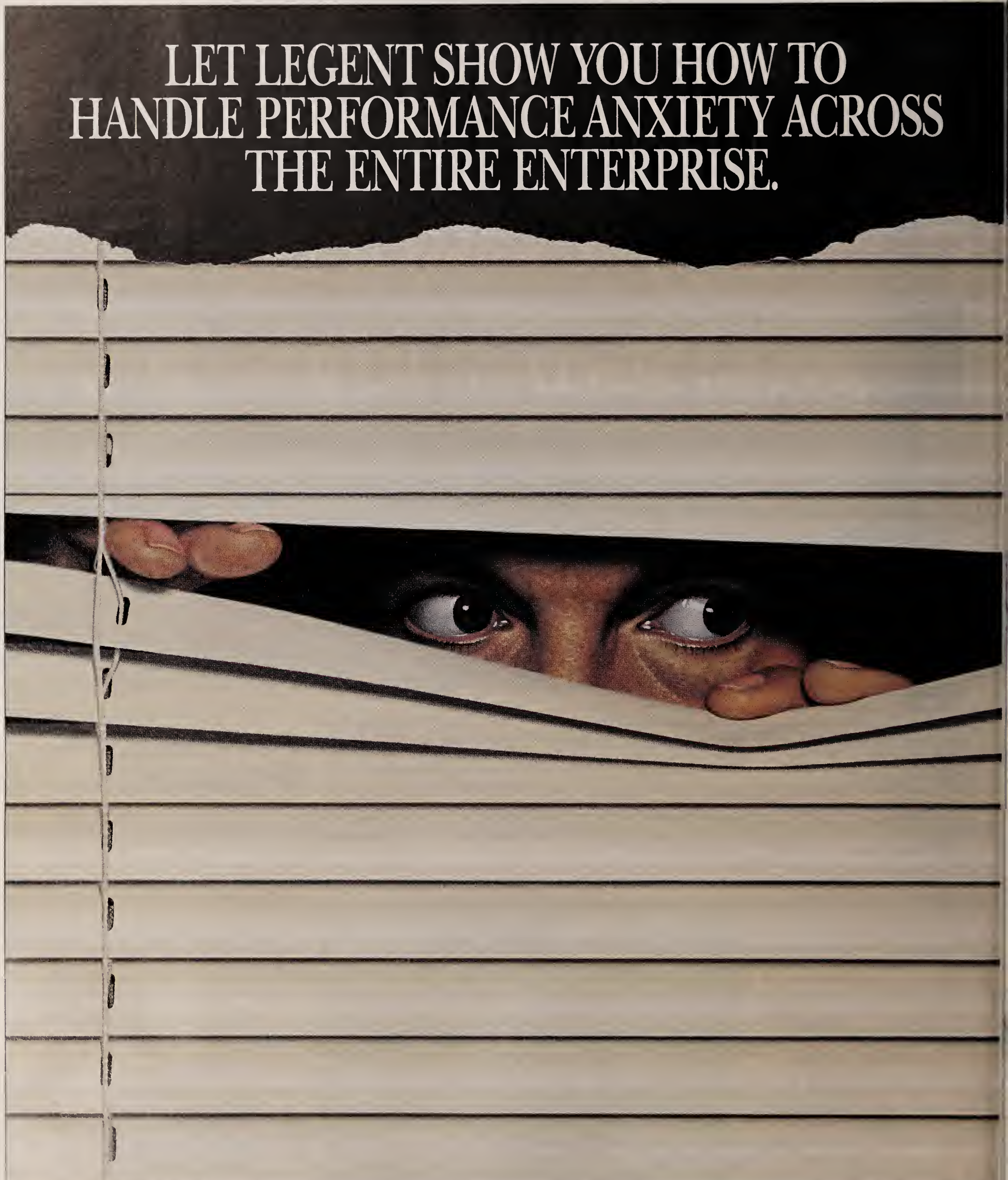
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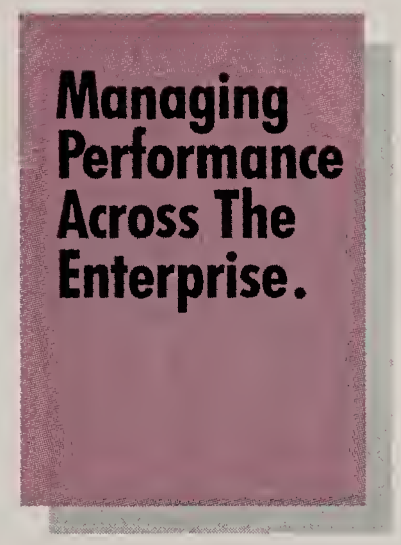

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LEGENT has licensed NaviGraph technology from Landmark Systems Corporation.

Sprint announces ISDN connectivity

By Lynda Radosevich

As part of the nationwide movement to bring Integrated Services Digital Network (ISDN) to the desktop, Sprint Corp. has announced immediate availability of its Local Packet Network (LPN)-to-ISDN connectivity product.

The LPN-ISDN Interconnect will reduce costs by letting companies use ISDN services over phone lines provided by their local telephone companies to gain access to company mainframes connected to SprintNet. Before, companies that required ISDN service to tie into SprintNet had to lease a dedicated line from their local carrier.

The service will also allow users to access public services such as CompuServe and Dow Jones News/Retrieval directly, without using a modem.

ISDN provides 64K bit/sec. digital access to voice and data service over a single telephone line.

One initial application of the LPN-ISDN service will be credit-card validation, according to Peter Nalaszkiewicz, a SprintNet services product manager. The service will speed up processing without increasing costs, he said, because users make a digital rather that analog connection.

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Coursey

CONTINUED FROM PAGE 55

sion tool, like the cellular telephone, which allows otherwise wasted minutes to be put to productive use.

This is what wireless messaging is all about, and I haven't even mentioned wireless calendaring and scheduling, wireless work-flow applications, wireless vertical or mission-critical applications or even wireless 3270 sessions. Add those together and you have a powerful reason to be investigating wireless right now.

Wireless E-mail cuts the chains that bind businesspeople to desktops, LANs and telephone lines.

Let me warn you up front: Wireless messaging is in its infancy, about ready to master a well-coordinated crawl. But before a real baby would be ready for first grade, several flavors of wireless should be widely available. Here's a quick primer:

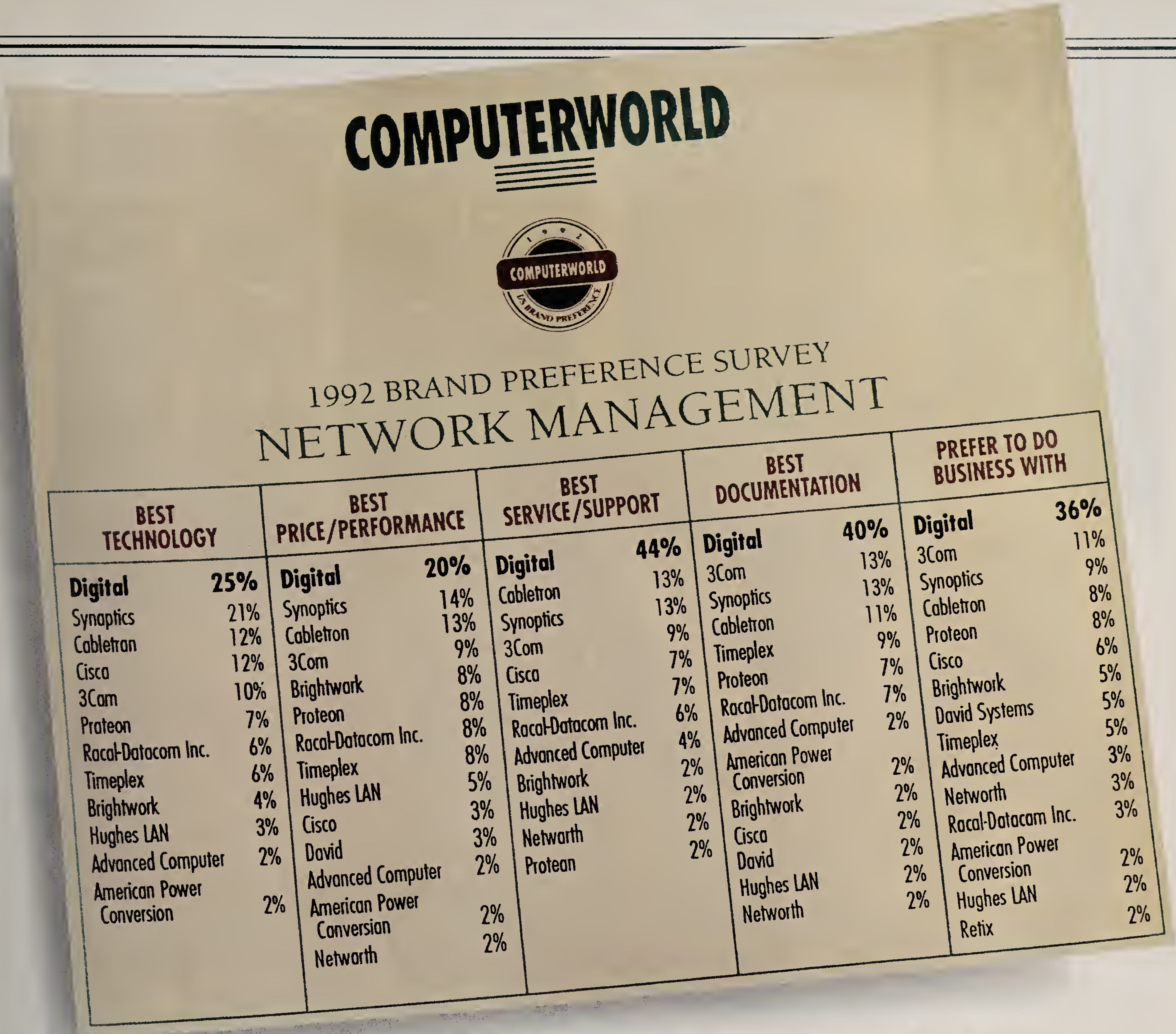
- Available right now is RadioMail from RadioMail Corp. in Menlo Park, Calif. It runs over the RAM Mobitex network and uses an HP-95 palmtop and an Ericsson GE Mobidem radio modem. The system costs about $1,600 plus a monthly service charge. Every user is given an Internet address and can send and receive messages.

The current limitation is coverage. RAM Mobitex is up and running with limited coverage (airports, downtowns) in most major metropolitan areas. Wide coverage is available in New York, Boston, Washington, D.C., Baltimore, Chicago, Philadelphia, San Francisco and Los Angeles. In those cities, RAM Mobitex really shows its worth. More coverage will be added throughout 1993.

- The strongest near-term competitor to RAM Mobitex doesn't exist yet, but when it does, it will come from the cellular telephone carriers, which are looking at ways to build data support into their systems. There are trials under way. The cellular folks made a splash at Comdex, but commercial availability will have to wait for next year's model.
- Later, expect to see new personal communications services created to provide data support for portable computers. Both personal communications services and the cellular services are likely to be technically superior to RAM Mobitex over the long haul, more easily supporting large numbers of users and the tiny radio signals sustainable by the batteries of personal digital assistants, when they finally arrive on the scene.

People who care about mail and workgroups should investigate wireless messaging. If budgets allow, highly targeted demonstration applications make sense. Then, as the technology comes together, you'll be in a position to move — before your competition does.

Coursey is editor of "P.C. Letter," an industry newsletter based in San Mateo, Calif. Send him mail at coursey@radiomail.net, and he'll send you your first wireless message.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Advanced Computer	2%	David	3%	Netwarth	2%	Cisco	2%	Networth	3%
American Power Conversion	2%	Advanced Computer	2%	Protean	2%	David	2%	Racal-Datacam Inc.	3%
		American Power Conversion	2%			Hughes LAN	2%	American Power Conversion	2%
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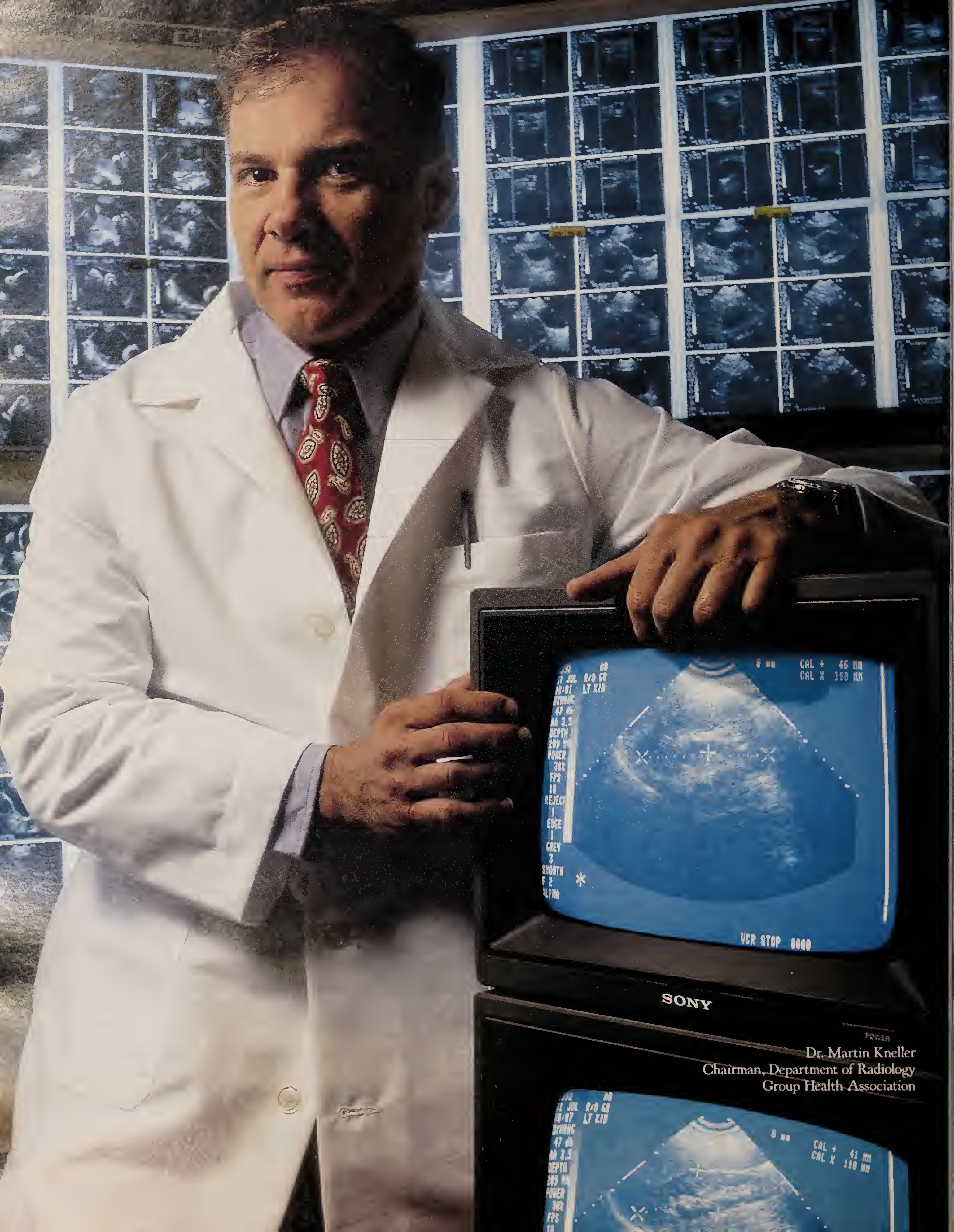

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Chevron bets on APPI protocol

CONTINUED FROM PAGE 55

lish APPN Network Node specifications early next year and to elicit vendor input on future APPN enhancements at regular forums.

However, some vendors, Cisco among them, claim APPN can never be a truly open protocol because IBM will continue to control APPN and its development.

Vandell is responsible for developing a tactical plan for consolidating Chevron's SNA and LAN transmissions on a single multiprotocol internet backbone. At a recent meeting of the APPI Forum, she outlined her reasons for choosing APPI.

One big reason is that Chevron already has a "multiprotocol internetwork" backbone that links various LAN sites worldwide via Cisco routers. The firm currently has about 50 routers, "with a potential for over 500," Vandell said. "We have a very diverse computing environment; if something exists, we have at least one of it."

Chevron wants become a totally TCP/IP shop but must still support SNA.

Various Chevron installations have Token Ring, Ethernet and Fiber Distributed Data Interface networks running a combination of TCP/IP, Digital Equipment Corp.'s DECnet, Xerox Network Systems, SNA and Novell, Inc.'s IPX.

Chevron is now looking at ways to incorporate SNA on the internetwork. "A lot of sites where we have deployed our multiprotocol internetwork also support SNA," Vandell said. "And a lot of SNA sites are going toward distributed processing." In addition, many of Chevron's SNA sites also use TCP/IP, she added.

Chevron eventually wants to become "a totally TCP/IP shop" but still has the need to support SNA, Vandell said. "APPI sounds great" as a way for Chevron to go ahead with its plans to support peer-to-peer SNA, including IBM's APPN — but "in an open environment. APPN is proprietary" and would constitute yet another protocol that Chevron would have to implement on its backbone, Vandell said.

In contrast, APPI promises to allow users to route SNA over their existing TCP/IP routers, Vandell pointed out.

"Even if IBM eventually opens up APPN, it still needs to work with TCP/IP standards bodies to incorporate the best of both protocols," Vandell said. She added that she hopes the APPI Forum will do exactly that: "We want the forum to provide TCP/IP [multivendor] interoperability features on APPN and provide APPN features, like security, on TCP/IP." Chevron expects to integrate its SNA and multiprotocol internetworks' physical networks fully by 1995 using APPI, she said.

Vandell is also considering implementing frame relay and then the higher speed Asynchronous Transfer Mode technology, she said. Both handle any type of networking protocol. Open Systems Interconnect is also a possible long-term direction for the company, Vandell said.

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In Brief

Continental service

The European network services market will see revenue growth rates of 38% annually over the next five years, according to a recent report from **Datapro International**. LAN and internetworking markets will see a total growth of 259% in terms of units shipped between 1991 and 1995, the report said. However, that growth will be offset by a steady decline in price per unit, Datapro said.

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New Products

Gateways, bridges, routers

Walker Richer & Quinn, Inc. has introduced Version 2.0 of Reflection 8 terminal emulation software.

Reflection 8 was designed to bridge the Transmission Control Protocol/Internet Protocol (TCP/IP) and IBM's Systems Network Architecture environments. The product provides 3270 communications capabilities to local-area network-based PCs that are linked to a Token Ring or Ethernet backbone, the company reported.

Reflection 8 uses the TN3270 protocol and needs a TCP/IP network to be on either a 3172-style controller attached to the mainframe or the IBM mainframe. Extended display and field attributes are supported as well as full keyboard mapping and structured fields.

A single copy costs $269.

➤*Walker Richer & Quinn*
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Micro-Integration Corp. has released the MI 5250 Remote Gateway. Support for up to 64 sessions per card and up to 256 sessions per local-area network are provided.

The gateway runs at rates of up to 64K bit/sec.

A new intelligent card that requires fewer PC resources than cards in previous versions enables users to increase their gateway speed regardless of what type of PC they are using, the company reported. Working with or without IBM PC Support/400, the MI 5250 Remote Gateway allows users to mix PC Support sessions and emulation on the same card.

The product costs $2,995.

➤*Micro-Integration*
215 Paca St.
Cumberland, Md. 21502
(301) 777-3307

Network management

Concord Communications, Inc. has introduced Trak/Report, a utility for its Trakker internetwork monitor.

The utility integrates an Ingres Products Division relational database with graphing and reporting capabilities, the company reported. Two key capabilities are provided: Data from all network segments can be combined to form one coherent network view; and Trak/Report configures network nodes into logical groups, enabling users to see aspects of the network from various points of view. Link layer monitoring is provided for a number of protocol suites including Novell, Inc.'s NetWare, Apple Computer, Inc.'s AppleTalk, IBM's PC-NET and Xerox Corp.'s XNS.

Trak/Report costs $7,500.

➤*Concord Communications*
753 Forest St.
Marlboro, Mass. 01752
(508) 460-4646

Customer premises equipment

Symplex Communications Corp. has announced the Datamizer IV H-Series.

The H-Series combines throughput multiplication at fractional T-1 speeds, bandwidth-on-demand, inverse mulitplexing, transparent alternate routing, changeable interfaces, multiple trunk-load sharing, performance analysis and automatic port configuration.

A "FlexPort" capability allows any of six ports to be designed as either an input channel or trunk line. The system anticipates and reacts to changes in traffic volume and line quality with a "throughput-on-demand" capability, activating and deactivating added throughput as needed.

Prices range from $7,950 to $13,950.

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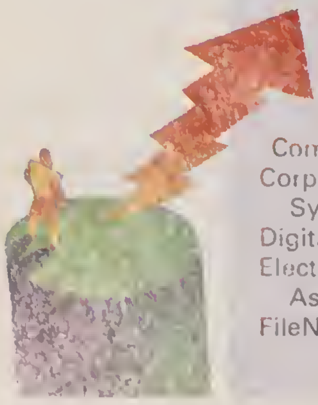

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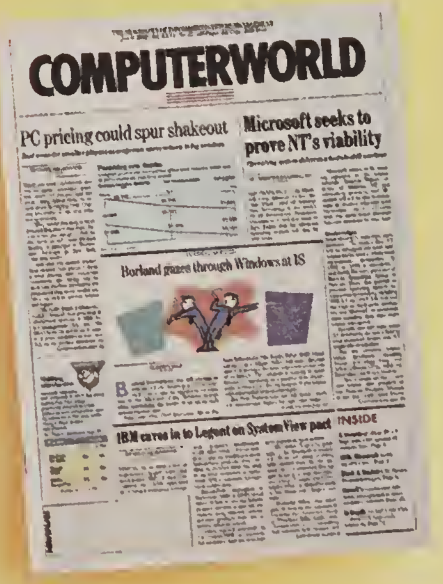
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CARNEGIE UPGRADES TESTBENCH, 70
HOSPITAL BOOSTS PROCESSING CAPABILITIES, 68

DEC's Alpha offers OS choices

At a glance

How can multiple operating systems run on Alpha AXP? With PALcode, a set of subroutines specific to a particular Alpha operating system, according to DEC.

PALcode subroutines offer operating system primitives for context switching, interrupts, exceptions and memory management. Written in standard machine code, PALcode offers implementation-specific extensions to access low-level hardware.

By Melinda-Carol Ballou

When Digital Equipment Corp. demonstrated the company's Alpha AXP PCs running Microsoft Corp.'s Windows NT operating system earlier this month, the minicomputer maker opened the question of which operating system will ultimately be the primary one for the Alpha family of processors.

DEC demonstrated a range of applications, including Oracle Corp.'s relational database management system, Cincom Systems, Inc.'s Supra Server, Precison Visuals, Inc.'s PV-Wave visual data analysis software and Computervision, Inc.'s DesignView parametric engineering software, some of which have long roots in the DEC VMS and Unix families. It is part of DEC's effort to position Alpha as a host for the range of operating environments.

One of the highlights of DEC's Alpha AXP series is the ability of the architecture to encompass a range of operating systems through the use of Privileged Architecture Library (PALcode) subroutines. DEC is already shipping platforms running Open VMS and OSF/1 and will ship the PCs running Windows NT when Microsoft makes NT generally available next year.

The goal of this strategy is to allow DEC to run a variety of horses in the operating systems race — Unix and Open VMS, with Microsoft's installed base of millions of DOS and Windows users moving to Windows NT as a key potential prize for the company.

"The goal with NT is to put DEC back into the mainstream," said Bill Bluestein, analyst at Forrester Research, Inc., a market research firm in Cambridge, Mass.

One of the challenges for DEC in relying on NT as a vehicle to move into that mainstream is a dependence on Microsoft's release date for NT, which is behind schedule, he added. Another challenge is wooing non-DEC users to adopt Alpha AXP.

But DEC has been doing well in the PC market through PCdirect, and "the idea that these are the highest performing NT machines ... as servers for PC LANs rather than 486 machines ... may serve them well," Bluestein said. "Just the fact that DEC is riding the Microsoft wave gets the noise level up to the point where people will say, 'Maybe we should consider DEC.' "

And many of DEC's current customers are eagerly awaiting the release of the NT-based Alpha AXP platforms.

Stanley Rose at Bankers Trust Co. in New York, for instance, is looking to Alpha AXP initially as an

Alpha, *page 70*

Moving to client/server

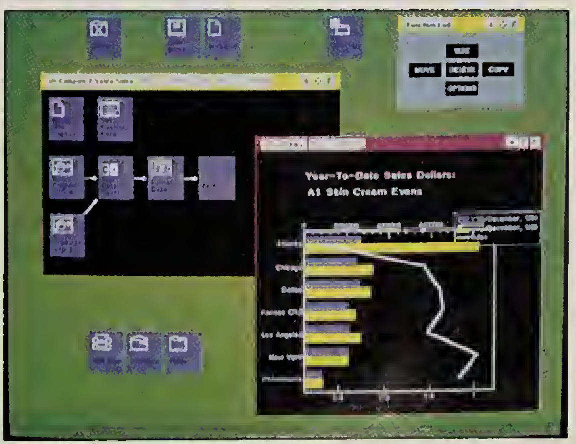
Metaphor opens its decision support

By Jean S. Bozman
MOUNTAIN VIEW, CALIF.

Metaphor, Inc., an IBM subsidiary, is like a surfer trying to ride the next wave all the way to the beach.

The 10-year-old firm, which has been selling decision support software to some of the country's largest companies, is adapting it for client/server database systems. The move comes a year after IBM bought the firm and months after it was granted marketing autonomy and took on a new chief executive officer.

Longtime users said the changes are welcome, moving Metaphor's workgroup decision support products from an IBM-only architecture to open systems databases and off-the-shelf PC applications. "We see their expansion as opening the doorway to standard PC packages," said Robert Peterson, director of marketing information services at Coors Brewing Co. in Golden, Colo. "Metaphor's tool set is extremely good at doing 90% of basic [data] analysis, but there are things it would make sense for them to include, like graphics packages."



The Data Interpretation System *has been ported to Sybase and Oracle databases*

Metaphor said earlier this month that it had ported its Data Interpretation System (DIS) software to Sybase, Inc. relational database management system servers. DIS had already been ported to Oracle Corp. databases. There is also new support for Red Brick Systems, Inc.'s Warehouse product, providing users of Metaphor's OS/2 platform with a view of data from IBM's Information Warehouse databases and a gateway to NCR Corp.'s Teradata database.

Prices for DIS start at $10,000 for a 10-user OS/2-based system. Metaphor software tools start at $2,200.

DIS is based on object-oriented "capsules" that contain both data and applications. Users click the capsule icons to rearrange them, varying their analyses of statistical and sales data. They can then send the modular programs to co-workers for further analysis. Before 1989, Metaphor ran only on proprietary hardware from former supplier Britton-Lee, Inc. Metaphor now runs DOS and OS/2 applications; it does not yet support Microsoft Corp. Windows desktop applications.

Nynex Corp. uses DIS to study sales data from an IBM DB2 RDBMS and to find market trends before competitors do, said John Tedesco, director of marketing information systems. One hundred users launch up to 120,000 DB2 decision support queries a month — up from 10,000 queries launched from an information center before Nynex purchased DIS in 1990.

Users create custom applications based on the building blocks of DIS "capsules" containing data and applications. "I've always thought of [the capsules] as Tinkertoys," said Tedesco, who manages Metaphor use at Nynex. "We can connect them any way we want."

Metaphor hopes to hang on to users like Tedesco. Metaphor has about 200 customers, many of them multibillion-dollar corporations such as Procter & Gamble Co. in Cincinnati. But its proprietary systems slowed sales to new customers. "They have been less visible the last couple of years," said Clare Gillan, an International Data Corp. software analyst, who noted that Metaphor once had $60 million in sales of bundled hardware systems. Now, software sales are just a fraction of that, with most of those being additional sales to existing Metaphor sites.

However, Chief Executive Officer Cathie Selleck, a longtime IBM executive, plans to boost sales by targeting vertical markets beyond Metaphor's consumer products stronghold. Given IBM's blessing to take a different marketing tack, Metaphor is rapidly paddling out to find more surf.

"It's wonderful to be on the right side of the wave," Selleck said. "We have the complete ability and charter to make arrangements with anyone we feel can help to move this business ahead."

Verity's DDA enables application access

By Melinda-Carol Ballou

Verity, Inc. last week announced Dynamic Data Access (DDA), a suite of packaged and documented software interfaces that will let systems integrators and value-added resellers develop Topic applications that access, search and retrieve information stored in other applications.

The first implementations of DDA will include Topic SQL Gateways to Lotus Development Corp.'s Notes and accessors to word processing files and foreign language interpreters, company officials said.

"We needed a driver strategy to hook into other repositories," said Laura Cory, senior vice president of marketing at Verity.

She said that when the company released SQL Gateways to specific databases such as those from Sybase, Inc. and Oracle Corp. more than a year ago, it discovered that users needed access to a range of database and other applications. "We could have been stuck hard-coding nothing but database accessors," she said.

Major vendors such as Hewlett-Packard and Lotus licensed the Topic technology, and DEC has been considering it.

DDA enables Verity to focus on product development while giving developers and sophisticated end users a way to use Topic's text-retrieval and searching capabilities across applications.

Major vendors such as Hewlett-Packard Co. and Lotus have licensed the Topic technology, and Digital Equipment Corp. has been considering doing so.

DDA will be available with Topic Version 3.12, which is scheduled to ship next month. It is priced from $40,000 to $100,000.

IBM gives health provider shot in the arm

By Rosemary Cafasso
NORWOOD, MASS.

Neponset Valley Health System (NVHS) plans to upgrade to a higher-end IBM Application System/400 Model E80, which will give a needed boost to current processing capabilities as well as expand its use of patient-care applications.

A second project will bring T1 lines to NVHS to link its various satellite operations. NVHS is the parent organization of two community hospitials, clinics and several home-care services groups in Southeastern Massachusetts.

It is also a veteran IBM midrange user, having started with an IBM System/38 in the early 1980s. NVHS runs a combination of IBAX Healthcare Systems application software and in-house-designed systems. It now uses an AS/400 B70 and said it was not interested in looking at other platforms when it made a decision to upgrade.

"When you consider other hardware, think, what it would take to convert?" said Walter Kane, vice president of MIS. "It would probably take $3 million or $4 million" when the new hardware and software as well as training and support are factored in, he added.

Kane said NVHS approved the E80 purchase late last month. It should bring the response time of three to five seconds down to about one second, he said. It will also offer "much better throughput" on the current processing, which is about 90,000 transactions per hour, Kane said.

But beyond these improvements for the core applications that support accounting, human resources and headquarters, the E80 will give information systems more capacity so it can increase the hospital's use of clinical and patient-care systems, Kane added. "The strong emphasis now is on the clinical side," he said.

Some clinical applications are installed today but are in limited use. An order communications system from IBAX, for example, is helping to automate the process of requesting laboratory tests for patients. By putting the procedure on-line, the medical staff will no longer write orders on paper and dispatch them by messenger to the appropriate department.

Kane said the software is being used at three nursing stations at its Norwood Hospital facility. These stations are linked directly to Healthcare Laboratories, a for-profit NVHS division. The goal now is to expand that throughout the Norwood facility and then include the second hospital, Southwood Community, which will eventually have better access to the computer system because of the T1 lines.

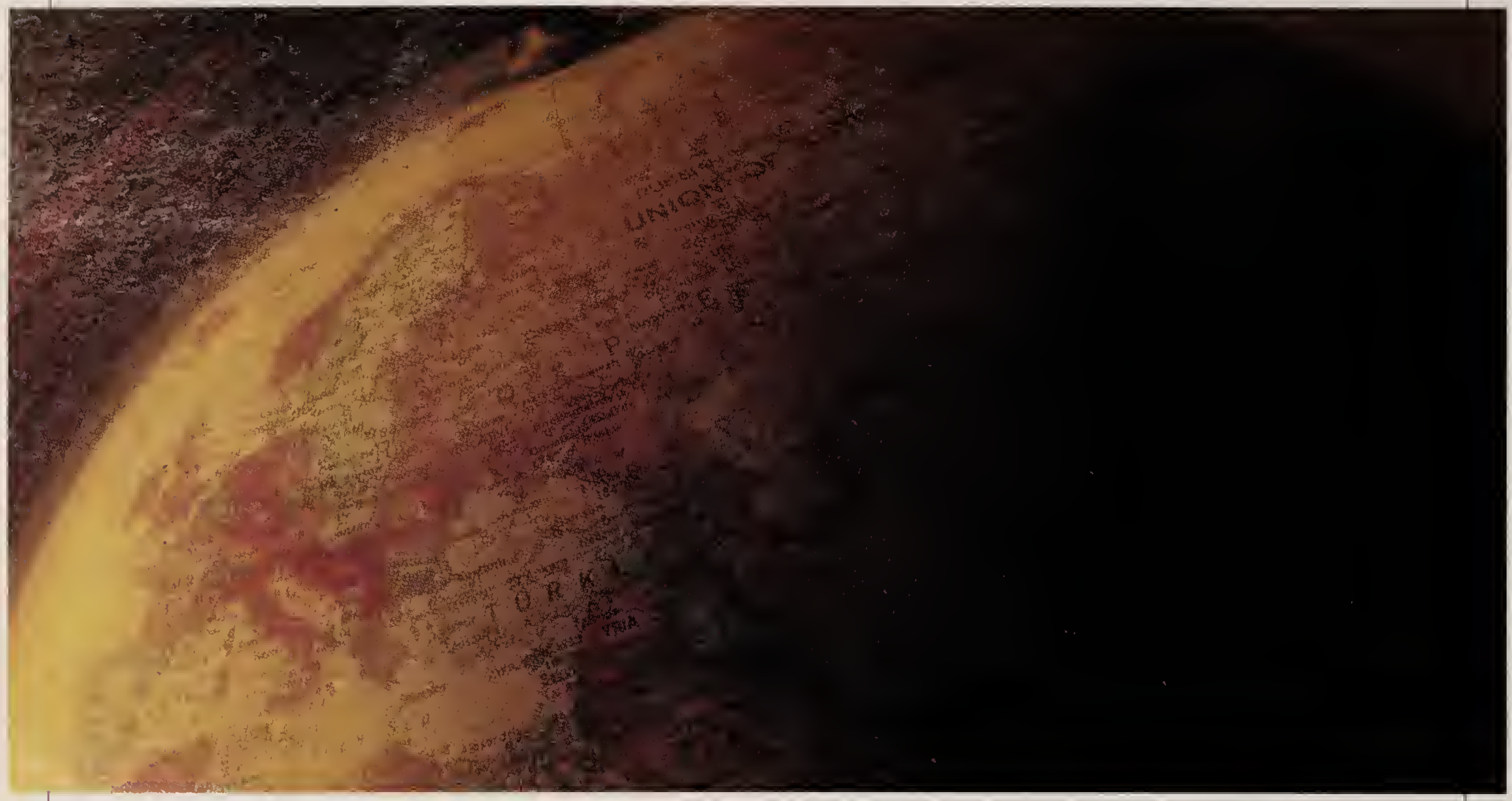
Another application Kane is hoping to expand is an employee profile system that is currently produced for companies in the NVHS region. The system compiles data on hospital visits of a firm's employees and then produces charts to indicate trends. Kane's staff has been producing these reports for two years on an occasional basis and is now aiming to produce reports "at a minimum of once a quarter."

ON SITE

Neponset Valley Health System
Norwood, Mass.

Challenge: Increase processing capacity to get better throughput and add more clinical applications to system.

Strategy: Replace AS/400 Model B70 with higher end E80, add T1 lines to connect health-care group's satellite offices.



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TestBench adds case-based reason

By Kim S. Nash
PITTSBURGH

Carnegie Group, Inc. has upgraded TestBench, a system for building help desks and troubleshooting programs for field and customer service departments. Version 2.2 adds case-based reasoning to other problem-solving capabilities already included in the product, such as decision trees and user-defined rules of thumb.

TestBench is used by customer service and field support workers in various industries as a diagnostic tool that can be tailored to the needs of different kinds of problem solvers, such as sales representatives, inventory planners or computer help desks.

The addition of case-based reasoning lets users enter and keep files on common problems and solutions.

A development module, called TestBuilder, was designed to help users create knowledge bases for diagnosing and fixing problems encountered by field and customer service workers.

The latest edition also supports Dynamic Data Exchange and Dynamic Link Library functionality for Microsoft Corp.'s Windows. That means the product's TestView module can talk to other applications running under Windows to display pictures or link cross-referenced data, according to Carnegie Group.

Due to ship in January, TestBench Version 2.2 is priced at $4,000 for an upgrade.

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CW113092

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DEC's Alpha offers OS choices

CONTINUED FROM PAGE 67

upgrade path for his current VAX systems on VMS and ultimately as a platform for NT.

"We think NT will be the hot operating system of the future, although I don't know what the operating systems wars will yield in five years or whether NT will completely replace VMS [by that time]," Rose said. "But the marketplace will vote."

Other DEC users said they are interested, but they are taking more of a wait-and-see attitude.

"I'm sure [NT] will be something that many VMS sites and Unix sites will be wanting, but it's not here today," said Marge Knox, president of the U.S. chapter of the Digital Equipment Computer Users Society (DECUS). "It's an interesting technology, and people are trying to get educated about it."

"There's a lot of waiting and seeing to be done, and people that I've been speaking with are still predominantly interested in VMS. But NT is riding like a bullet. It would not surprise me for NT to exceed VMS in terms of unit shipments [for Alpha] within 12 to 18 months after it ships," said Bill Mayhew, chairman of DECUS' business practices special interest group.

Mayhew added that the price of the Alpha PCs, which DEC has said will be under $10,000, will help persuade people who have not bought into DEC in the past to buy into the platform.

In Brief

Confused about whether to restructure or ditch your outsourcing contract, or whether to even outsource in the first place? **Compass America, Inc.** in Reston, Va., announced a service, ROI, that compares what users are getting — or will get — for their outsourcing dollar with the best cost of doing it internally.

Unisys Corp. is creating a Unix-based Air Mail Accounting System for Scandinavian Airlines. It will include a Unisys U6000/65 that uses two Unisys fourth-generation language development environments — Linc and Mapper.

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User Friendliness	8.9	7.7	8.3	8.1	7.5	7.0
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Vendor Training	8.7	7.9	8.0	7.9	7.6	6.7
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Quality of Vendor Support	9.0	7.8	7.5	7.4	6.9	7.2
Frequency of Releases	8.5	7.5	6.7	6.9	7.7	7.2
Response to User Request	8.8	7.5	7.8	7.6	7.0	6.5
OVERALL SATISFACTION	9.3	8.7	8.5	8.3	8.0	7.6

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SUPPORT FEATURES AVERAGE	7.68	6.32	5.93	5.18
OVERALL AVERAGE	8.11	6.65	6.62	6.00

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CPWADV1130

Wrapping code can save time

By Jean S. Bozman

Enthusiastic about object-oriented technology but have a long, long inventory of Cobol programs to re-engineer? No problem, some users said. There is a shortcut that can move you into an object-oriented, client/server environment faster than you think: wrapping.

Wrapping simply means covering traditional programs, Cobol code and old-fashioned database systems with a veneer of object-oriented code, such as C++ or Borland International, Inc.'s SmallTalk.

"To me, it's just a word," said Steve McClure, a senior consultant at International Data Corp. in Framingham, Mass. "The concept is that you define a very specific and well-thought-out interface that says how you interact with the old applications."

Wrapping may be only a transitional step, but it can save valuable time — and prevent application developers from having to reinvent every program wheel in the corporation. Some said the technique is akin to using an adapter to bridge the differences between American 110V electrical current and European 220V current. It is one way to bridge the gap between the client/server and mainframe architectures.

"With wrapping, you're defining a small piece of code that connects to the old data," explained Richard Soley, vice president and technical director of the Object Management Group in Framingham, Mass. "But when you've got the time and you want to get better performance and better features, you'll go back and rewrite the old application. For now, it's a step along the path, and it saves you time — absolutely."

Taking the lead

Some large user sites are leading the way, including Citicorp, Deere & Co. and The Boeing Co.

"We're considering placing wrappers around legacy systems," said Colin Crook, senior technology officer at Citicorp in New York. That way, he said, reduced instruction set computing machines could act as front ends for legacy database servers running on mainframes. "It's permitting us to look at the legacy applications from an object-oriented [point of] view."

Citicorp, the nation's largest bank, plans to mix new and old programming technologies in a 1990s re-engineering effort that will rewrite or discard about half of the bank's inventory of mainframe applications, he said. The aim is to let business units quickly prototype new applications — using object-oriented languages in many cases — and access data servers throughout the bank's network. "New objects running on client/server technology communicate with old legacy systems, which we treat as psuedo-objects," Crook said.

At Deere & Co., the emphasis is on tying together disparate systems on an enterprise network so a new crop of client systems can access scattered data sources. "We're trying to take existing legacy applications and provide a message-based front end on them," said one developer who did not wish to be identified. "We've had various versions of it running on our own software for more than a year."

Some analysts said the trend toward wrapping will accelerate as users realize it is a practical use of object-oriented technology that protects decades of investment in old systems.

"People are so excited about client/server technology," said Natasha Krol , a senior software analyst at Meta Group, Inc. in Westport, Conn. "But serious client/server systems will come about only when you start taking pieces of your legacy systems and migrating them to the desktop." Krol said users may choose to encapsulate many elements of the existing architecture, including SQL statements, data sets, programs and entire databases. "It's extremely conducive to encapsulating any legacy system and weaving it into a new infrastructure," she explained.

However, some analysts cautioned, there may be a downside to wrapping: It merely papers over a lot of old procedural code. "Object wrapping is sometimes like wrapping fish," said Adrian Bowles, vice president of New Science Associates, Inc. in Westport, Conn. "It continues to rot inside. So wrapping a system doesn't make it better. It's a lot like coating a pill to make it easier to swallow."

The bug question

Even though users and analysts see benefits to wrapping old code, there can be snares for which you have to be on the alert.

"You have to be very confident that the code you wrap is good," said John Morrell, a Unix analyst at International Data Corp. in Framingham, Mass. "If you throw a wrapper around something and a bug occurs, the question will be whether it's a bug in the original code or a bug in the wrapper. That's why many people won't truly encapsulate but will find ways to interface with the old code."

Commercial users, vendors accuse government of CASE standards bias

By Garry Ray

A major CASE standards effort became rancorous in recent weeks as vendors, government officials and commercial users leveled charges of favoritism and commercial bias at one another. At stake, both sides said, is the long-term viability of the U.S. computer-aided software engineering (CASE) industry.

More than a technical dispute, it involves "proposals to put substantial amounts of money" into software standards, said Gene Forte, executive editor of "CASE Outlook," a Seattle-based CASE newsletter. "It's about the competitive advantage of American software companies vs. Europeans," he added.

The dispute became public with a letter sent Nov. 18 by Edward White, a vice president at Atherton Technology in Sunnyvale, Calif. In the letter, addressed to a senior official at the National Institute of Standards and Technology (NIST) and sent by White to members of the press, White charged that NIST and the U.S. Department of Defense (DOD) are supporting a CASE standard that will "undermine American National Standards Institute efforts to establish a standard which will better serve the interests of the U.S."

Atherton is the developer of the CASE A Tool Integration Standard (ATIS), which has been implemented by The Boeing Co., GTE Government Systems, Verdix Corp. and other companies in a number of government contracts. ATIS competes in the CASE standards arena with the Portable Common Tools Environment (PCTE), a 10-year effort headed by the European Computer Manufacturers Association at a purported cost of more than $400 million, according to a senior Boeing official. In addition, PCTE is currently the foundation for a proposal under review by the International Standards Organization (ISO).

Because of its support in Europe and in the ISO, "we want to use PCTE as baseline" for a U.S. CASE standard, said NIST senior computer scientist William Wong, the recipient of White's letter.

Not entirely impartial

But politics are also playing a part in the decision. Though Wong agreed "PCTE is not quite strong enough now," he said that by working on the standard, "we have the opportunity to influence" the ISO.

No matter. The DOD "is pulling the trigger too fast" by supporting PCTE, White later said. Because it supports dated technology, "PCTE is another AD/Cycle, another attempt to boil the ocean," he said.

A Boeing spokesman agreed: "We support the direction and thrust of Atherton and are strongly committed to ATIS and the functionality underneath it."

But beneath the immediate technical concerns is one point on which all parties seem to concur. Forte said, "If you let Europe define what the [CASE] standard is, then they will have a competitive advantage" in CASE and commercial software over the long term.

Commentary

Greg Pope

Quality, not quantity

While the U.S. is the unequivocal leader in the global software market, it is no secret that our software is infested with bugs.

This anomaly is possible only in the absence of serious international competition. Like the automobile industry in the 1950s and '60s and the semiconductor industry in the 1970s and '80s, the U.S. software industry has used its pioneering innovations to sustain a prolonged period of unchallenged prolific growth.

This period is now over. As foreign software developers continue to produce more high-quality code, the U.S. software industry — including commercial users — must re-evaluate its entire software development methodology to retain its competitive edge. If quality does not become a priority, the U.S. software industry will suffer the fate of the automobile and semiconductor industries.

The issue of software quality transcends the domain of U.S. economic competitiveness and impacts everyone living in an industrialized society.

As heirs of the technology revolution, we unwittingly interface with several million lines of software code every day. Making a phone call, for

Pope, *page 74*

Pope

CONTINUED FROM PAGE 73

instance, depends on our more than 500,000 lines of reliable software code. Digital alarm clocks, stereo systems, traffic signals, aviation equipment, medical devices, televisions and car braking systems all rely on quality software programs.

The need for reliable, bug-free software is no longer an issue that belongs exclusively in the software testing laboratory. It is an issue that affects our economic position in the global marketplace as well as our everyday safety and well-being.

To err is human

The development of software applications and programs is a complex, arduous and tedious task sometimes requiring several hundred thousand lines of software code for a single application. Because software development is still largely a human endeavor, it will, by nature, generate errors. If these errors are not detected and corrected, they can cause the software to malfunction. Depending on the specific application, a software malfunction can be a minor nuisance or, in the case of systems that control hazardous materials, result in injury or death.

The demand for efficient and thorough software testing tools is magnified by computer-aided software engineering tools, software re-engineering, object-oriented programming and other automated software development tools and methodologies. These new tools and methodologies have enabled programmers to generate an unprecedented amount of code. The result is a backlog of software that cannot be adequately tested with today's debugging tools and manual testing methodologies. More than ever, there is a need for better and more automated testing methodologies.

There exists in the U.S. software industry a mythical six-stage software development "waterfall" process that is based on an adequate project schedule. This schedule is predicated on the belief that 1) the system design requirements will remain frozen during the entire development period; 2) the development resources will remain stable; and 3) the software will be tested for up to half the period using state-of-the-art debugging tools. At the completion of this development process, it is believed the software will be bug-free and ready for delivery.

The need for reliable, bug-free software is an issue that affects our economic position in the global marketplace.

But in the real world, software testing is generally regarded as the stepchild of the software development process, rarely receiving the attention it deserves. Based on the assumption that software can never be perfect, software management has come to accept the notion that incomplete or flawed software is acceptable.

This dangerous line of reasoning is often used by management to compress testing cycles to ensure timely delivery. The result is defective software and a continual devaluation of the software testing process.

The real-world software development process reinforces the all too common assumption that software testing is inconsequential, an impediment to the development and financial goals of the software organization.

Beta testing and early adopter programs are often used as a substitute for thorough system testing, creating the potential for defects to go undetected. While beta testing was originally conceived as a method for evaluating the customer's software preferences, it has now grown into a bug detection methodology.

The problem, however, is that a corporate beta tester rarely has the time to significantly evaluate the product. Then when bugs are detected, the user usually gets frustrated and discontinues evaluating the product without forwarding the relevant information to the test engineer.

Clearly, software quality is the new imperative. But achieving quality does not happen by accident. By making long-term strategic investments in quality programs such as automated test tools, U.S. software vendors can begin to build quality and user satisfaction into the very fiber of the development process.

Pope is the general manager of the Test Products Group at Tiburon Systems, Inc., a software company in Santa Clara, Calif.

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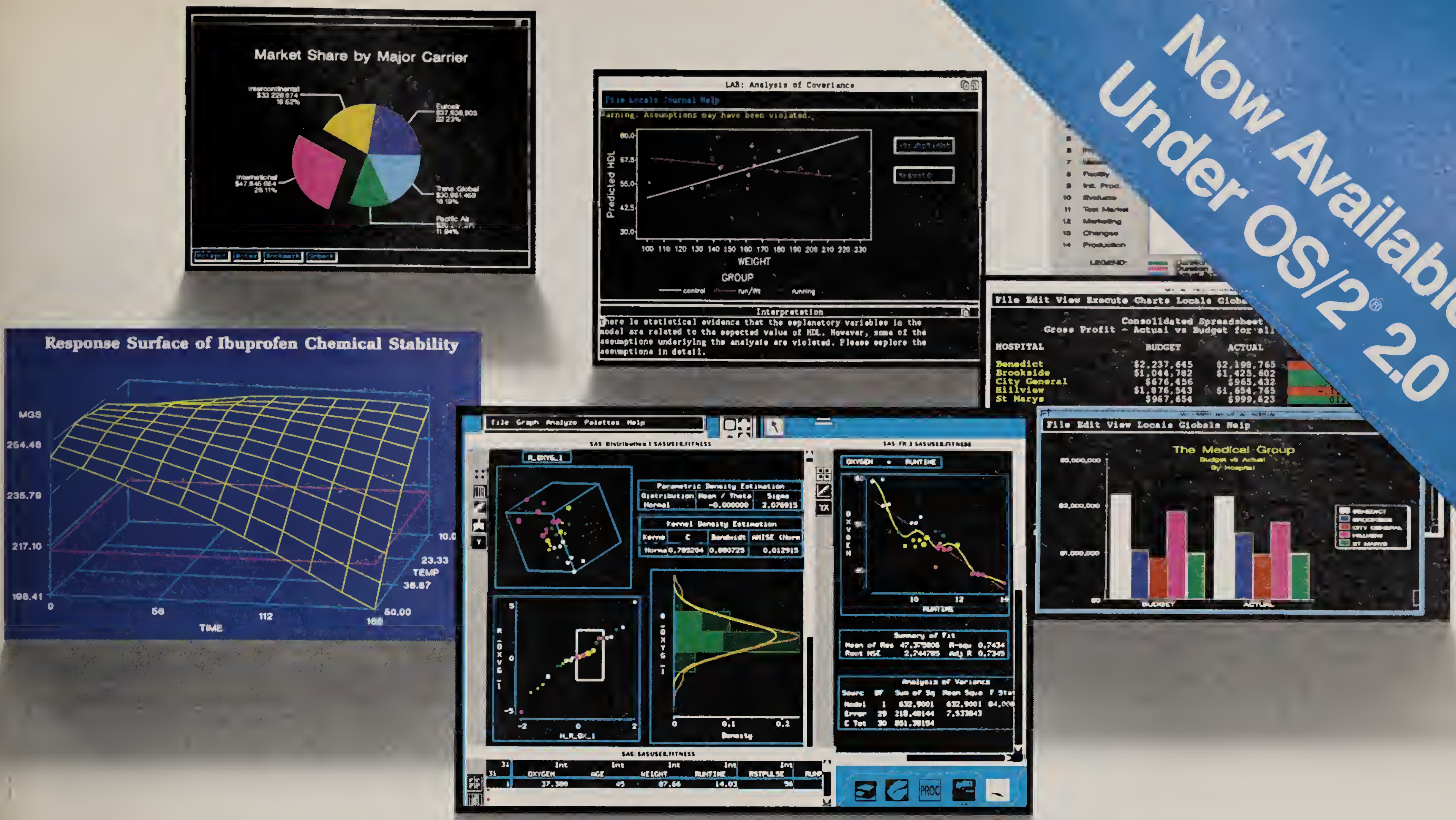
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Interpretation
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RUNTIME
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The Medical Group
Budget vs Actual
By Hospital
BUDGET
ACTUAL

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Consolidated Spreadsheet
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HOSPITAL	BUDGET	ACTUAL
Benedict	$2,237,645	$2,198,765
Brookside	$1,044,782	$1,425,602
City General	$676,456	$965,432
Hillview	$1,876,543	$1,654,765
St Marys	$967,654	$999,623

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Seize the *customer* day

As chairman of the world's largest direct marketing servicer, Neodata's Tom Harbison misses no opportunity, including outsourcing, to satisfy his 130 million customers

DAN BRYANT

The chairman: Thomas O. Harbison, chairman and chief executive officer at Neodata.
The career: Neodata, chairman and CEO; Telecommunications Marketing, Inc., founder; U.S. Telephone, Inc., president and CEO; Probe One Computer Service, founder; Sorbus, Inc., founder and president; MAI Basic Corp., president; IBM, account representative, product specialist. University of Texas at Austin, bachelor's degree in business administration, 1965.
Greatest accomplishment: "Turning an early 1980s vision of creating a fully integrated supplier of direct marketing services into a reality."

Tom Harbison says he learned his most important lesson about customer service not in business school or from 27 years in marketing, but at a Houston hotel in 1977.

"I gave the desk clerk my credit card, and in about five minutes he came back," recalls the husky Texan, who was traveling with three small sons. "Instead of rejecting my credit card and being loud and boisterous, he was tactful enough to lean over and say: 'Mr. Harbison, your credit card is full.' That is a customer moment I have never forgotten."

Not only has Harbison remembered that day, but he's also made it the cornerstone at Neodata Corp., the $175 million Dallas-based firm that bills itself as the world's largest direct marketing services firm.

Formed in a 1990 merger, privately held Neodata acts as a customer service and fulfillment company for its 500 clients, which include *Reader's Digest*, General Foods, *Better Homes and Gardens*, the U.S. Postal Service and scores of other big names in banking, retail, insurance and dozens of other fields.

For a fee, Neodata will process subscriptions, catalog sales, television offers — you name it. But its real forte is database marketing, an emerging field that uses huge stores of data to help clients identify new opportunities.

And nowhere is this dual focus on customers and technology more evident than in a massive new relational database project under way since 1989. When completed, the so-called NCORE system (Neodata Customer Oriented Relational Environment) will handle millions of customer transactions.

No technophobe, Harbison, 49, a former IBMer and founder of Sorbus, Inc., the largest independent computer service provider, has outsourced most of Neodata's technology operations since 1990 to Electronic Data Systems Corp. — to the tune of about $30 million a year.

Joseph Maglitta, a *Computerworld* senior editor, management, spoke recently with Harbison.

■ Why no CIO?

People have asked me about it. People have pushed for it. I think the original thought was that if we're going to outsource to EDS, we needed that person to manage EDS. I said no.

Harbison, *page 78*

Inside
Intelligence files: *Items of interest from publications, speeches, research projects. Page 79*

Seize the customer day

CONTINUED FROM PAGE 77

I wanted somebody to be counselor and to be in a position to understand exactly what's going on in Neodata.

[EDS representative] John Nastasi carries a business card today that says "VP of Information Technology, Neodata." Now, he works for EDS; he's paid by them. But when he goes to meetings, that's the card he hands out. And that's what he is for us. John's a member of our steering committee; I don't even think of him as EDS.

We have a president of an EDS unit who's been on one of our boards for two years, for the basic reason that EDS is such an integral part of our operation. We pay them a lot of money. But we would have paid a lot of money to ourselves.

■ Why EDS?

We did it for several reasons, but more importantly, we found it was a practical approach to planning. We said: "We need results now. We need volume in order to maintain current systems, to afford the latest technology for our clients."

We didn't outsource to EDS because of anything other than that I really thought it was the best thing. There were no hidden agendas. I know some people from EDS; that didn't hurt. I know they spend more money training their people.

■ Outsourcing rough spots

I can't say we've ever gotten screwed. We've had uncomfortable moments.... Look: I get mad at my wife — we've been married 25 years. Do [EDS and I] have differences? Yes. But I believe more than anything else in my life that intent is the cornerstone of any relationship. We've never had that problem.

Family relationships, marriages, business relationships generally fail not because I did wrong or because what we did was not successful but because you questioned my intent, my agendas. We're doing a lot to eliminate that.

■ The vision thing

What we have done is to be very careful to articulate where we are going, even though we're not sure of how we're going to get there.

If you walk into any office in Neodata, you'll see that stuff plastered in lobby hallways, bathrooms. The mission book that we produce, every manager has a personalized copy, with their name on the bottom of every page. By going public with those things, it's making it easier for our people to commit to each other and not question intent.

Every organization, whether it be the information technology group or the marketing or operations group, all know the direction of Neodata.

I went to Federal Express two years ago and we had dinner, the presidents of several companies. I sat with a young man from Atlanta who worked as the assistant manager of billing, probably 27 to 30 years old. He articulated the Federal Express mission and vision. And he wasn't the only one. You could tell that they just didn't prime the pump for the meeting. We're not there yet, but I hope that two years from now that we are there.

■ Seizing customer moments

Our mission in life is to enhance the customer moment — that is: For our clients, make each and every potential contact that our service organization has with their end customer the most precise, rewarding and enhancing experience.

Technology is making that more possible and reducing the "impersonal" nature that generally is associated with most direct marketing.

I don't care whether you are a direct marketer or with General Motors or a mass product distributor in some wholesale or retail line or target marketing. Understanding and building relationships with your customer is critical to the success of any information technology direction.

■ Aligning business and IS

We focus on planning because information technology is the most expensive thing in our corporation, second only to labor. Our 5,000 employees work worldwide basically in important transaction processing.

We have to clearly define the role of information technology in our organization based upon three or four competencies. We have developed a simple chart that is expressed to everybody in our organization. These core competencies are the envelope that those kinds of responsive systems will exist in.

When we were able to secure our single largest client, we were able to do that simply because we were able to articulate an information technology direction that they felt comfortable with. When we've made mistakes in the past, it is that we've had a separate information technology culture. The ownership of information technology has to come from the groups.

■ Creating business with technology

Take *Better Homes and Gardens*, a very successful publication. Through information derived from transaction processing and reading letters to the editor and so forth, they started a magazine called *Wood*.

Wood has been an extremely successful magazine. From that they started a magazine called *Wood Decor* because they understood from managing the information that's stored in our system that most of the letters to the editor were from women.

Neodata Chairman Tom Harbison: *"We have been very careful to articulate where we are going"*

Neodata facts

Provides services, including fulfillment and database marketing, to companies that use direct marketing.

Headquarters are in Dallas. Divisional headquarters in Omaha; Boulder, Colo.; Des Moines, Iowa; Limerick, Ireland, and five states.

Employs 5,000.

Annual revenue is approximately $175 million. Company is privately held; has filed for an IPO.

Last year, Neodata sent out 500 million pieces of mail and received 70 million responses. Company agents fielded 25 million telephone calls and made 13 million outgoing telephone calls.

■ Down on "high-level"

If I never hear the word "high-level" again, it will be just fine.One of the things I think we do as information technology people is we want to give everybody a high-level view. People in operations don't understand these high-level views. They need to know how they are going to impact their operation — today.

■ On being a technology pioneer

We were the last family in Wichita Falls, Texas, that had a color TV. When I was growing up, they were kind of greenish. My dad kept saying they were gonna perfect them. I wish I had more of my dad's mentality today because we have stepped out on some things that cost.

We put in predictive dialing equipment in our telemarketing service. We weren't very smart. We were the leader who paid 60% more than everybody who waited a year. We had projections that we were going to get a premium. We're not getting a premium.

I don't know what the answer is. Somehow vendors have got to protect the client when they make those kinds of investments.

■ Next steps

We are developing what has been written about as the virtual organization. It is not easy and it's scary and things change.

We are working point to point to where the next time I check into that hotel in Houston it will be: "Welcome to the Four Seasons. How was your flight from Dallas? I notice that this is your fourth trip to the Four Seasons this year.... We have your favorite bottle of [wine] in your room to celebrate your birthday."

Executive Track

Summit Information Systems, Inc. Vice President **Gerald A. Long** has been promoted to president. Summit, the information systems subsidiary of Akron, Ohio-based Roadway Express, was spun out from its less-than-truckload motor carrier parent in 1989.

A slew of promotions recently struck among the IS advisory complement at international accounting, tax and management consulting firm **Ernst & Young**'s West Region Management Consulting Practice. In the San Jose, Calif., office, 16-year IS veteran **Matthew K. Hudes**, who heads up the High Technology Information Systems practice, is now a partner. Before joining Ernst & Young in 1984, Hudes served as IS director at Fremont, Calif.-based Vitalink Communications Corp.

In Ernst & Young's Los Angeles office, 20-year IS veteran **Patrick Garrett**, who leads the Advanced Technology practice, has been named a principal of the firm. An expert in all aspects of data center management, Garrett formerly served as one of the office's senior managers.

Varian Associates, Inc., a diversified technology company serving a panoply of vertical markets, has named **John Ineson** director of corporate IS. Ineson joins Varian after 16 years at N.J.-based paper and chemical manufacturer Union Camp Corp.

Have you or a colleague in IS recently been promoted? *Computerworld* would like to share your news with the rest of the IS community. Please contact Associate Editor Carol Hildebrand at (800) 343-6474 to pass the news along.

Intelligence Files

IS for one-stop shopping

Here are three ways to make your information systems more customer-focused:

- Systems should support one-stop shopping with a cross-functional database. In a multidivision company, customers should be able to call one place and have one person take care of all their needs.
- When an information system is designed, get customer input from surveys, focus groups and face-to-face meetings. Too many IS projects focus on streamlining internal operations rather than on benefiting customers.
- Systems should support "One and Done." That means one call is all that is needed to close a transaction. Strive for an average of 1.1 to 1.2 contacts per transaction.

Source: Interview with Leslie Harps of The Customer Service Group, Silver Spring, Md., Oct. 16, 1992.

Mergers and outsourcing

Consolidation has become a way of life in many industries, so organizations need to consider how mergers will affect their outsourcing contracts.

This problem was underscored by the recent merger of two Pittsburgh-based banks, Integra Financial Corp. and Equimark Corp.

Each company had an outsourcing contract with a different vendor. Equimark decided to drop its outsourcing vendor and go with Integra's, but the termination required a $4.5 million payment to the losing vendor.

The lesson: Be sure to have an escape clause in the event a merger forces the cancellation of outsourcing services.

Source: "Outsourcing Contract Concerns," from "Bank Outsourcing Report," Oct. 15, 1992.

Librarians for CIO

Theoretically, corporate librarians are in a good position to become information czars in a corporation, but that is not happening. Instead, many business libraries are being decimated by budget cuts, and librarians are either too timid or unprepared to take leadership roles.

If the librarian becomes CIO, then the corporate library will become integrated with other information resources and survive. Otherwise, it may very well disappear.

Source: "Librarians in the 21st Century — Endangered Species or Future Chief Information Officer?" by Arlene Farber Sirkin, in "SpeciaList," the newsletter of the Special Libraries Association, October 1992.

Making the 'open' case

The consortium X/Open Co. has introduced a guide to help IS executives persuade management to take the plunge into open systems. The "Open Systems Business Case Guide" provides a methodology for identifying areas where open systems can support business objectives. The guide will be available by year's end for a nominal fee.

Source: X/Open Co., Menlo Park, Calif., Oct. 5 announcement.

Outsourcing complexity

The federal government has made dozens of regulatory changes in its student loan program this year, prompting more banks to consider outsourcing that portion of their business.

Fearful that a mistake in updating their systems will result in financial penalties, small banks are turning to outsourcers for student loan processing, according to John E. Dean, special counsel to the Consumer Bankers Association.

Source: "Outsourcing Gains in Student Loan Area," by Matt Barthel, *American Banker*, Sept. 29, 1992.

Compiled by national correspondent Mitch Betts.

Calendar

DEC. 13 - DEC. 19

The Fourth Annual Baltimore Computer Conference and Exposition. Baltimore, Dec. 15-17 — Contact: National Trade Productions, Inc., Alexandria, Va. (703) 683-8500.

JAN. 3 - JAN. 9

ShowBiz Expo East. New York, Jan. 7-9 — Contact: Live Time, Inc., Los Angeles, Calif. (213) 668-1811.

JAN. 10 - JAN. 16

Software User Documentation: Designing for Usability. Orlando, Fla., Jan. 11-12 — Contact: Digital Equipment Corp., Marlboro, Mass. (508) 467-6910.

Electric West '93. San Diego, Jan. 12-14 — Contact: The Fairfield Factor, Inc., Brookfield, Conn. (203) 775-0422.

JAN. 17 - JAN. 23

The Canadian Software Re-engineering and Maintenance Conference. Toronto, Jan. 19-21 — Contact: Digital Consulting, Inc., Andover, Mass. (508) 470-3870.

Outsourcing Conference '93. Dallas, Jan. 22-23 — Contact: Frost & Sullivan International, New York, N.Y. (212) 233-1080.

JAN. 31 - FEB. 6

Downsizing Corporate Information Systems Conference. London, Feb. 1-2 — Contact: Amanda Stuart, IBC Technical Services Ltd., London 011-071-637-4383.

Object World. Boston, Feb. 1-4 — Contact: Lynn Fullerton, World Expo Corp., Framingham, Mass. (508) 879-6700.

Comnet. Washington, D.C., Feb. 2-4 — Contact: World Expo Corp., Framingham, Mass. (508) 879-6700.

FEB. 7 - FEB. 13

1993 UDMS User Conference. Keystone, Colo., Feb. 7-10 — Contact: Rebecca Campbell, Interactive Software, Keystone, Colo. (303) 987-1001.

Managing Enterprise Networks Conference. San Francisco, Feb. 8-10 — Contact: Digital Consulting, Inc., Andover, Mass. (508) 470-3870.

Expo Comm Mexico '93. Mexico, Feb. 9-12 — Contact: Ben Stauffer, E.J. Krause & Associates, Inc., Bethesda, Md. (301) 986-7800.

Commentary

Nell Margolis

Saying when

From the invention of the wheel to the advent of the VCR, just about every technological turn in history has had one big advantage over the Desktop Revolution: to wit, a reasonably clear idea about what the stuff is good for and how much, when and how to use it.

Oh, sure, plenty of folks refused to *drive* the Model T or to ride in it — but how many failed to realize that driving and riding were the general idea? Lucky Henry F.

And lucky Tom Edison, whose ad folks never proposed this campaign: *The Light Bulb: so nutritious — and it tastes good, too!*

Today's IS leaders aren't going to be that lucky — at least, not immediately. Out there on the front lines of the Desktop Revolution, the hard stuff may be getting easier all the time. But the easy stuff, like knowing where the technology fits in and where it fouls up, remains deceptively tough.

That's why any IS leader who admits that it's hard, acknowledges that knowing how technology works doesn't necessarily mean knowing when it's appropriate, focuses on asking the right questions rather than obsessing over the right answers and inspires users to follow suit is likely to emerge as a hero in the age of re-engineering.

Too much technology . . .

I had my first glimmer of how tough the going was about to get one day six years ago, when I watched a computer-savvy executive figure out how much money would revert to his budget if one of his straight-salary staffers went to a four-day workweek.

On the off chance that this fellow, who graduated *cum laude* from one of the nation's leading universities, had a problem figuring 80% of the staffer's $30,000 in his mind, he had within easy reach two pocket calculators, one adding machine and 10 fingers.

What he used was a spreadsheet package on a VAX minicomputer.

Five minutes and heaven knows how many dollars later, he looked up in triumph. "Do you know how much we could save?" he asked.

"Six thousand dollars a year?" I ventured.

"Wait a minute," he said. "How did you get that? You can't even see the screen from there."

True, but I could see my fingers.

Unfortunately, folks, this story is true.

. . . and too little . . .

Just how much we all still have to figure out about when to use desktop technology and when to lose it was hammered home to me on two coasts last month: In California at the annual Society for Information Management conference, IS leaders didn't exploit desktop technology when they should have (were you at SIM? Remember all the awful slides?); and in Massachusetts, a prep school leader shouldn't have reached for the PC when she did.

Person after person took to the podium during the three days of one of the IS community's most prestigious gatherings to urge the recognition of the importance of driving technology through the user organization and to talk of the compelling ways in which the PC is changing the way we work.

Virtually everyone showed slides. Virtually every slide showed pies, bar graphs, or, worst of all, text.

Sadly, the slides were boring, confusing and hard to see.

It was pathetic: A host of seasoned technologists sat down at PCs packed with enough powerful presentation graphics software to give a Hollywood studio a run for its money. Instead, they came up with nothing that would have strained the capacity of the simple overhead transparencies folks used to draw on with magic markers, project onto screens and call "visual aids."

. . . too late

I arrived home from SIM just in time for an assembly at my daughter's school. The headmistress is no techie, but she's no slouch, either: Charged with introducing the evening's speaker, she did her notes on a PowerBook.

Unfortunately, her tongue got a tad ahead of the screen. That's how she came to deliver what amounted to an accidental comic monologue full of golden moments along the lines of: "After he returned from China, this versatile artist was committed (long pause) to a more introspective way of life."

Happily, this is a lady of some humor as well as dignity. After three or four awkward pauses, she stopped trying to conceal what was going on and started to camp it up. She left the stage to rousing applause.

Not as much applause, however, as the next speaker, who flawlessly delivered a riveting presentation without any notes or slides whatsoever. He grinned and said, "It was easy — I don't have a PowerBook."

Margolis is a *Computerworld* senior editor, management.

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Downsizing *without the fuss*

Not ready for client/server but need to cut data center costs? Consider 'rehosting.'

TIM CLARK

By Alan Radding

Six years ago, before downsizing, rightsizing and client/server computing became buzzwords, Pepperidge Farm, Inc. was fed up with its IBM 4381 mainframe. "We were spending more time supporting the IBM product than supporting Pepperidge Farm products," recalls David Wright, manager/information technology.

At the time, the Application System/400 minicomputer was just a rumor code-named Silverlake. But Wright liked what he was hearing about it: a big, host-like machine that required minimal support. "We figured we could bring in three of those instead of the 4381 and still save money," he explains.

IBM "told us it was a pipe dream," Wright continues, but it played along when the Norwalk, Conn.-based biscuit and baking company opted for the change.

Looking back, Wright realizes that what he was talking about then was a type of downsizing now referred to as "rehosting," a trend the minicomputer vendors — especially IBM and Hewlett-Packard Co. — have recently embraced and started to promote heavily, especially as high-end PCs and Unix boxes increasingly invade their turf.

Like old wine in a new bottle, rehosting repositions and repackages the familiar minicomputer for the 1990s.

The rehosting promise goes like this: By moving applications off the mainframe and onto a less expensive and more easily supported host, you can still save bundles of money without having to totally retrain your staff, hire new people or encounter the risks associated with a radically different environment such as Unix or PC local-area networks.

Not only do you save money (the main purpose of this type of downsizing) and get to dump those tired, worked-over mainframe applications for new and usually integrated minicomputer applications, but the new host also helps you make the eventual adjustment to PC LAN-based, client/server computing. The host minicomputer, the promise goes, can eventually be evolved into a big LAN file server.

A lot of the rehosting promise is real. Because they've moved up the price/performance curve faster than mainframes, minicomputers now of-

Downsizing, *page 82*

Radding is a free-lance writer based in Newton, Mass.

Cutting costs quickly

Cotter Canada, a Winnipeg-based retailer, was able to knock $2 million out of its $3.8 million annual data center budget by consolidating mainframe data centers and then rehosting from an IBM 4381 to an HP 3000. "We saved $250,000 the first year just on the difference between the cost of [IBM's] MVS and [HP's] MPE operating systems," says Norman Moore, MIS director. The company also enjoyed hardware savings, reduced application software costs and a reduction in operating staff required to support the minicomputer.

Not ready for client/server

Indian Head Industries, Inc., a manufacturer in Southfield, Mich., considered a PC LAN-based system when it left its IBM 4381 but opted instead for the AS/400. The problem with the PC LAN strategy, says Dennis Griffin, vice president of MIS, was that "we would just trade mainframe experts for a set of PC LAN experts." That wouldn't help him meet his objective, which was to save money. The AS/400 was the better choice because it didn't require any additional expertise, he says.

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Strengths and weaknesses of leading rehosters. Page 83

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HP, IBM top satisfaction poll. Page 84

Straight talk from William Sines. Page 85

Minicomputers

Lab report: TPC-A benchmark ranks minicomputer speeds

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Featured vendors' best systems (by throughput)

System	Operating system	Database	*Total system cost	Throughput	Price/performance
Unisys 2200/622ES	OS1100SBR 4R2	DMS	$11,245,568	255.70	$43,980
Unisys 2200/462	OS1100SBR 4R2	TIP/FCSS	$6,410,096	228.50	$28,053
HP 3000 Series 977	MPE/IX V40.12	Allbase/SQL VFO.25	$1,337,303	150.60	$8,879
IBM AS/400 9406 E70	OS/400 V2R1	OS/400 int. rel. database	$987,792	54.90	$17,993
Digital VAXserver 4000-300	VMS V5.4	VAXDSM V6.0	$525,065	41.40	$12,683

Featured vendors' best systems (in price performance)

System	Operating system	Database	*Total system cost	Throughput	Price/performance
Digital VAXserver 4000-100	Open VMS V5.5-2	VAX Rdb/VMS V4.1	$416,255	51.95	$8,013
Digital MicroVAX 3100 Model 90	Open VMS V5.5-2	VAX Rdb/VMS V4.1	$278,016	34.00	$8,177
HP 3000 Series 957	MPE/iX V40.12	Allbase/SQL VFO.17	$703,433	84.93	$8,282
IBM AS/400 9404 E10	OS/400 V2R1	OS/400 int. rel. database	$98,697	9.92	$9,949
Unisys 2200/442	OS 1100 SBR 4R2	TIP/FCSS	$4,897,491	177.30	$27,623

*Includes five years of maintenance

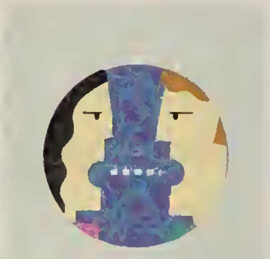
Source: Transaction Processing Performance Council

Always a trade-off

Although Unisys Corp.'s 2200/622ES and 2200/462 throughput ratings proved to be the most efficient of this Lab Report's featured vendors, they also held heavy price/performance costs. On the flip side, Digital Equipment Corp., whose machines filled the top price/performance slot, scored very light throughput ratings.

Downsizing without the fuss

CONTINUED FROM PAGE 81



Great debate

Certain arguments leap to mind when the subject of rehosting comes up.

POINT: You risk being abandoned on a dead-end platform with no easy way off. Each of the leading minicomputer vendors has an active Unix product line.

COUNTERPOINT: Users consider this scenario remote. In a worst-case scenario, they point to the robust third party market that would be more willing to fill a void until a migration path can be established.

for sufficient performance and capacity for all but the largest mainframe applications at a significantly lower cost.

And the vendors have worked hard to get third parties developing the requisite applications, especially HP, which has had to play a fast game of catch-up to IBM and Digital Equipment Corp.

For those not quite ready for the big change to client/server but needing quick cost-cutting, it's a likely solution.

"We see [rehosting] happening all the time," says Bill Sines, vice president/midrange systems and server research at Technology Investment Strategies Corp. in Framingham, Mass. "Instead of being dragged into client/server development — a high-risk undertaking," he continues, users "opt for a mainframe-like minicomputer.

"An IS shop should be able to reduce the cost of providing a set level of service by 15% to 20% a year," Sines says, "but large mainframes haven't kept pace with that kind of reduction."

Not a cure-all

But rehosting isn't the answer to everybody's prayers. There is a downside to this strategy. First, there is more to rehosting than simply swapping the mainframe for a cheaper box.

You must be prepared to leave behind existing mainframe applications or undertake a difficult porting effort that may not be 100% successful, Sines notes.

If you opt for new applications, that will of course be disruptive as you train and otherwise prepare users for the new platform. The environment might be less robust than what you are used to; the wide variety of data center management tools in the mainframe environment are not readily available in the minicomputer world, for instance.

But the most obvious argument against rehosting is that while the world moves to open systems, environments such as the AS/400, HP 3000 and DEC VAX are proprietary. That doesn't seem to bother users, though, who cite the support for standards such as Posix and SQL and Transmission Control Protocol/Internet Protocol.

They note that the machines support PC LANs, albeit awkwardly in some cases, and have attracted a large, active market of third-party providers of products and services, which keep them honest. DEC users point out Open VMS, suggesting it is as open as many of the so-called "open" platforms.

Client/server is not for everyone right now. As more people look into moving applications off the mainframe, downsizing may increasingly simply mean "rehosting." •

POINT: Minis still cost more than their Unix counterparts. Although the vendors have reduced prices substantially in recent months, pound for pound the multiuser Unix machines deliver more bang for the buck.

COUNTERPOINT: You may pay more, but users say they get a more robust operating system and one-call support without finger-pointing. Under Unix, users would have to integrate a number of tools and services to create a comparable environment.

Cost of ownership

THIS MODEL SHOWS WHAT YOU CAN SAVE BY MIGRATING FROM AN IBM 4381 TO AN AS/400. IT ASSUMES A TWO-YEAR TRANSITION PERIOD DURING WHICH THE ORGANIZATION ABSORBS COSTS ASSOCIATED WITH BOTH MACHINES, CAUSING TOTAL EXPENDITURES TO RISE DURING THAT PERIOD.

	Annual cost	Savings (thousands)
Year 1: Run 4381 (includes all costs)	$1.3 million	0
Year 2: Acquire and run A/S 400	$1.67 million	-370
Year 3: Run A/S 400	$1.375 million	-75
Year 4: Run A/S 400	$800,000	500

$500,000 annual savings from Year 4 on allows the company to reduce its IS expenses or invest in new systems

Source: ADM Consulting, Inc.

When asked of their plans, 28% of 119 minicomputer purchasers say they won't change how they use the minicomputer. Roughly the same number say they will work the mini into a LAN or will phase out the mini in favor of a LAN.

Minicomputers

'Rehosting' contenders

The Big Three —IBM, DEC and HP — set the pace in the market for rehosting

By Alan Radding

Leading the rehosting charge are the Big Three minicomputer makers: IBM, Hewlett-Packard Co. and Digital Equipment Corp. Second-tier minicomputers include Bull HN Information Systems, Inc., Unisys Corp. and Data General Corp., but these companies have been backing away from their minicomputers in favor of Unix-based servers. Here's how the leading vendors stack up:

Hewlett-Packard Co.

HP is serious about rehosting and has the Mainframe Alternative program to prove it. It now positions its HP 3000 machine as a "worry-free, business-critical solution" for people who want to move high-end applications off the mainframe but don't have the resources for Unix and can't do a lot of internal work on the application.

"For customers who don't want MVS but are nervous about Unix, HP is a good choice," says John Logan, vice president at the Aberdeen Group in Boston.

With its reduced instruction set computing (RISC) architecture — HP is the only one of the three top-tier vendors with RISC — the HP 3000 delivers 145 trans/sec. compared with about 55 trans/sec. for the Application/System 400, Logan reports. "For running [a processing-intensive application like] Oracle, it's a screamer," he notes.

HP offers symmetric multiprocessing, which makes for easy scalability. It also offers comparable multiuser Unix models as part of its Mainframe Alternative program, something the other vendors do not.

HP has been hard at work gathering "channel partners" to offer strong business and specialized vertical-industry applications. So far, it can list 3,000 to 4,000 applications, far short of the approximately 10,000 applications claimed by both IBM and DEC. Of course, HP claims these applications are the best the industry has to offer.

Despite the smaller pool of applications, new software was the key to choosing the HP platform for AIGM, Inc., an insurance company in Wilmington, Del. "We were following a two-pronged assault — reduce expenses and get more functionality," recalls Marty Hupka, vice president of systems.

The plan was to buy an off-the-shelf package and modify it in-house. "We eventually found a package we liked, and it was only available on HP," Hupka says. So the company purchased an HP 3000 Model 960 to support 300 users.

AIGM reduced information systems expenses by about 40%, Hupka says, and got the extra functionality it sought. The savings came primarily from lower cost hardware and less expensive development and testing, which can be done on a PC because the package is written in Micro Focus, Inc.'s Cobol. Software costs did not decline, "but we are getting a lot more functionality," he explains.

Key factors

Price and software availability are the biggest factors in minicomputer selection. In fact, many users are looking to replace cumbersome, old mainframe applications, so the availability of a good integrated package is often the most important determinant.

In the database area, HP offers TurboImage, a networked database management system, and Allbase/SQL, its relational DBMS. "Allbase is good but not very portable," Logan says. But neither is IBM's AS/400 database.

IBM

IBM's AS/400 is frequently the platform of choice for rehosting because users are often starting out with an IBM mainframe. "If people bought their mainframe from IBM, then they are very likely to continue with IBM by going to the AS/400," says Bill Sines, vice president/midrange systems and server research at Technology Investment Strategies Corp. in Framingham, Mass.

On the other hand, IBM only recently began actively positioning the AS/400 as a mainframe alternative because it was reluctant to cannibalize its higher margin mainframe business, says Teresa Elms, president of Elms Information Services Group, a San Diego research firm that follows the IBM midrange.

One of the key features of the AS/400 is its relational-like database. The database is tightly integrated into the AS/400 operating system, making it easy for every AS/400 application to use the database. Users often feel they get the database for free because it comes as part of OS/400.

The database, however, is not the equivalent of one from Oracle Corp. or Sybase, Inc. "It's not really relational, and IBM hasn't upgraded it much," Elms explains. "It needs referential integrity and two-phase commit. It has SQL, but it is not ANSI-standard." She says she expects IBM to upgrade the database in the next 18 months, making it closer to ANSI standards.

Lack of scalability — the ability to grow within the AS/400 line — has been a complaint about the machine, particularly at the high end. The current high end is the E series, but IBM is expected to introduce an even larger F series in 1993.

Indian Head Industries, Inc., a manufacturer in Southfield, Mich., opted for the AS/400 because it was comfortable with IBM from its mainframe days. "We wanted good support facilities, and IBM is always good for that," says Dennis Griffin, vice president of MIS. The company liked what it saw from DEC, but when it came down to making the buy, IBM's familiar support carried the day.

Digital Equipment Corp.

DEC's program has been on hold while users wait for Alpha AXP systems, its high-performance, RISC-based series of machines unveiled this month. The Alpha-based minicomputers will give DEC the performance lead in this category. However, Logan says he doesn't expect the VAX Alpha to be a factor in the rehosting market until 1994, when it is shipping in large quantities.

When it comes to scalability, DEC offers the widest range, from the desktop MicroVAX to the VAX 9000 series.

In the database area, DEC supports its own relational DBMS, Rdb, and leading relational databases such as Oracle. Unlike the AS/400, DEC does not tightly integrate the database with the operating system.

Like IBM, DEC boasts more than 10,000 applications, but many of these are scientific and technical rather than commercial. The IBM AS/400 application set is overwhelmingly commercial.

Even without Alpha, however, a DEC minicomputer can beat an IBM mainframe for certain users. Keyport Life Insurance Co. in Boston opted for a VAX to replace its mainframe-based accounting systems after looking at both PC and IBM AS/400 alternatives.

"We looked at PC-based systems, but they couldn't support our operation," says Roger Japlit, director of financial analysis. The AS/400 would do the job, but it was much more expensive, he notes.

Keyport runs Dun & Bradstreet Corp. software and supports 25 users. Japlit says he hopes to upgrade the VAX in January to better accommodate anticipated growth. •

Strengths and weaknesses

HP

Strengths:

- Fast, RISC-based performance.
- Support for symmetric multiprocessing.
- Best price/performance.
- Supports Novell, Inc.'s NetWare, LAN Manager, PC networking.

Weaknesses:

- Fewer applications.
- Less scalability.

IBM

Strengths:

- Largest selection of business applications.
- Tightly integrated database.
- Strong IBM support network.

Weaknesses:

- Lacks true relational database.
- Expensive.

DEC

Strengths:

- Supports leading relational databases.
- Excellent scalability.
- High performance (especially with Alpha).

Weaknesses:

- Weak selection of business applications.
- Alpha won't ship in quantity for a year.

Future values

THE FOLLOWING ARE RETAIL RESIDUAL VALUE PROJECTIONS FOR FIVE LEADING MINICOMPUTERS

	LIST	1993	1994	1995	1996
IBM AS/400 9406-E90	$927,000	New*	$407,880	$222,480	$111,240
IBM AS/400 9406-E25	$71,070	New*	$26,296	$12,082	$3,554
DEC VAX 6000-520	$315,400	$100,928	$47,310	$18,924	Salvage
DEC MicroVAX 3100-20	$11,879	$2,495	$1,069	$356	Salvage
Hewlett-Packard 3000-960	$485,000	$101,850	$48,500	$19,400	Salvage

*The equipment is being marketed by the manufacturer and/or other distributors as new, at the manufacturer's list price or a discount of that price.

Source: IDC Financial Services Corp.

Minicomputers

Buyers' Scorecard: HP, IBM rank on top of minicomputer satisfaction poll

By Derek Slater

HEWLETT-PACKARD CO.'s venerable HP 3000 line is still spry, according to users who gave it the highest satisfaction rating among four minicomputers.

The HP 3000, introduced in 1972, squeaked out a narrow first-place margin over IBM's Application/System 400 in the Buyers' Scorecard user survey. The HP 3000's overall score was 84, with the AS/400 at 83. Digital Equipment Corp.'s VAX finished third with a score of 79. Data General Corp.'s Eclipse MV systems rounded out the survey at 76.

The HP 3000, which also topped the previous Buyers' Scorecard on minicomputers [CW, Sept. 24, 1990], earned the highest score in important areas such as overall performance and availability. HP 3000 systems are based on reduced instruction set computing processors and run the company's proprietary MPE/IX operating system. Low-end models support eight users; the high end of the line supports up to 2,300 simultaneous users.

The company markets HP 3000 systems primarily as complete turnkey solutions for specific applications, which can be a blessing or a curse. Some users said the difficulty of adding new applications to the system is a significant limitation. The forthcoming port of IBM's CICS transaction processing environment (due in the second half of 1993) may increase the HP 3000's flexibility.

The AS/400 is a relative newcomer to the minicomputer market; the first models were released in 1988. AS/400 users noted flexibility as a key attribute of the IBM systems. The OS/400 operating system includes an integrated relational database component, which makes programming tasks much easier, according to users. (Taking its cue from IBM, HP will integrate similar database functionality into MPE/IX starting next month.) However, respondents also said the AS/400, like other minicomputers, is difficult to integrate with other hardware technologies.

The most recent AS/400 model, the E95, was released in September. It features a four-way processing scheme. The majority of the respondents in the survey reported using D or E series models.

The DEC VAX systems scored well in ease of use. Respondents — many of them using models in the VAX 6000 line — indicated that the relative ease of linking and configuring multiple VAX units was a plus. However, VAX systems scored poorly in cost-related categories, in part because of the lack of support for standard equipment such as inexpensive small computer systems interface disk drives. VAX systems also earned low marks in efficient I/O performance.

Several users said they plan to move away from the VAX platform but mentioned eagerness to see new systems based on DEC's Alpha technology.

DG scored well on price and performance. However, many Eclipse users said the architecture is outdated, despite the company's continuing product upgrades. DG released the new high-end Eclipse MV/60000 in August, expanding the Eclipse performance range up to 120 million instructions per second, with support for up to 1,709 users.

Buyers' Scorecard records users' satisfaction with their installed technologies. Users assigned 1-to-10 ratings based on their satisfaction with minicomputers in 15 categories.

All categories were factored into the final scores. The scores for each product in the six most important categories are listed in the tables below. (See the methodology on the following page for a complete description of the scoring process.) •

Minicomputers

Total scores reflect user ratings for 13 measured areas, weighted by user-assigned importance. Response base: 119 total respondents (29 for Data General; 30 each for all other vendors).

TOTAL POSSIBLE SCORE 100 MEAN SCORE 81

PRODUCT	SCORE	HIGHEST RATINGS	LOWEST RATINGS
Hewlett-Packard's HP 3000	84	• AVAILABILITY • COMPATIBILITY WITH INSTALLED HARDWARE • VENDOR SERVICE AND SUPPORT	• AVAILABILITY OF APPLICATIONS • OVERALL COST OF OWNERSHIP • EFFECTIVE NETWORKING SUPPORT
IBM's AS/400	83	• ABILITY TO PROVIDE FUTURE GROWTH • VENDOR SERVICE AND SUPPORT • SUFFICIENT STORAGE CAPACITY	• REASONABLE COST PER CYCLE • OVERALL COST OF OWNERSHIP • SUPPORT FOR DISTRIBUTED COMPUTING
DEC's VAX	79	• AVAILABILITY • COMPATIBILITY WITH INSTALLED HARDWARE • VENDOR SERVICE AND SUPPORT	• REASONABLE COST PER CYCLE • OVERALL COST OF OWNERSHIP • SUPPORT FOR DISTRIBUTED COMPUTING
Data General's MV Eclipse	76	• SUFFICIENT STORAGE CAPACITY • AVAILABILITY • SUFFICIENT MEMORY	• AVAILABILITY OF APPLICATIONS • SUPPORT FOR DISTRIBUTED PROCESSING • ABILITY TO PROVIDE FUTURE GROWTH

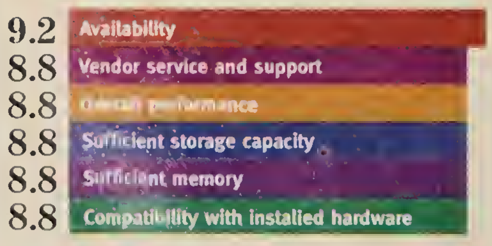
Ratings are based on a 1-to-10 scale, where 10 is best.

Responses are based on the most frequently stated answers. Quotes are selected from users' responses.

Reasons are based on the most frequently stated answers.

Hewlett-Packard's HP 3000

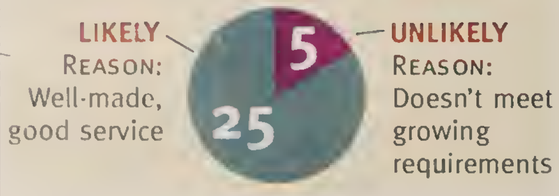
RESPONSE BASE: 30 USERS



LIKES: "We like the reliability and ease of use."

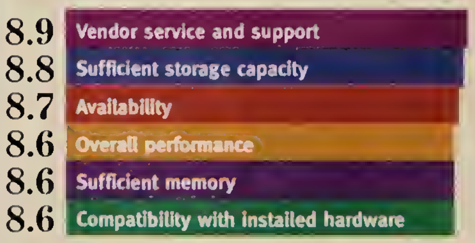
DISLIKES: "It's too specific in its capabilities — doesn't handle new functions well."

Would you buy the product again?



IBM's AS/400

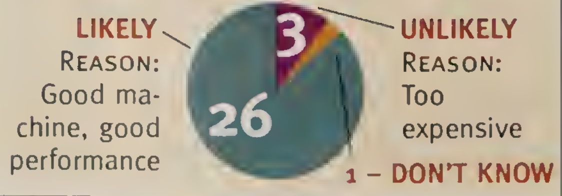
RESPONSE BASE: 30 USERS



LIKES: "The database processing aspect of the operating system makes programming much easier."

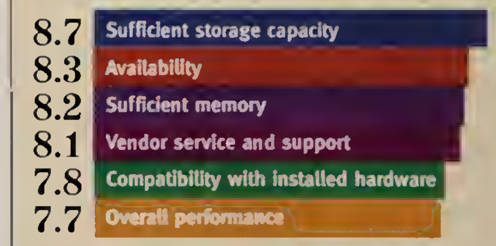
DISLIKES: "The cost of the machine and tiered pricing for the operating system."

Would you buy the product again?



Data General's MV Eclipse

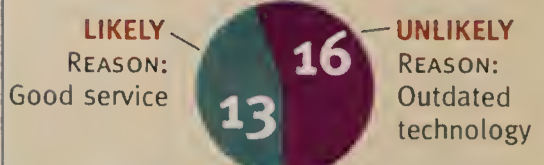
RESPONSE BASE: 29 USERS



LIKES: "It is reliable and gives us good performance for the price."

DISLIKES: "The proprietary operating system and lack of third-party software."

Would you buy the product again?



Minicomputers

Halfway to client/server?

By Alan Radding

You may opt to downsize to a minicomputer instead of a PC local-area network, but it's likely you'll want PC connectivity — either now or down the road.

A PC can be used three basic ways in a minicomputer environment: as a dumb terminal; as a PC occasionally accessing the minicomputer for host data and file sharing; and as a participant in a client/server setup.

Terminal emulation

There is plenty of terminal emulation software available that lets the PC access a minicomputer as a dumb terminal. Functionality is limited, and users may gripe about having to exit their PC to enter terminal mode and learning two operating systems . . . but it works.

File and data sharing

All the vendors provide facilities that allow LAN users to store and access files residing on the minicomputer. The performance will be slower than a typical PC LAN server, and you may have to resolve a memory crunch on the PC when you load minicomputer connectivity modules on top of the PC LAN operating system modules.

Client/server

Here the question becomes one of applications, not connectivity. Trouble is, the business applications that are such a large part of the appeal of minicomputers were not designed for client/server computing. It is feasible (but not simple) to create new ones, where the minicomputer becomes a database access server.

Given the demand for some level of PC connectivity and a clear movement toward client/server computing, the minicomputer vendors are scrambling to boost PC connectivity capabilities.

IBM offers PC Support, which lets the PC connect with the Application System/400 without it having to operate as a dumb terminal, the traditional way PCs connect to minicomputers.

Teresa Elms, president of Elms Information Services Group, a San Diego research firm that follows the IBM midrange, gives IBM an "A" for good intentions, but she is disappointed in the end result. "PC Support is slow because it provides a lot of functions users don't really need. It is also expensive," she says.

Still, it works, and there aren't many alternatives if you want to connect PCs on a LAN to an AS/400. Novell, Inc. offers networking products that facilitate a connection between NetWare PC LANs and AS/400 minicomputers.

Digital Equipment Corp. provides PC connectivity through Pathworks, a network operating system that lets the VAX participate as a server to a PC LAN.

As a full-blown network operating system, Pathworks supports a broad range of desktop clients and servers running on many networks.

Pathworks, too, is criticized as being slow and expensive, although DEC has recently cut prices. Using a DEC product called NetWare Coexistence, you can get the Pathworks server to work together with Novell NetWare clients, but it consumes a lot of resources.

Hewlett-Packard Co. supports PC connectivity by running common PC network operating systems. The 3000 supports Novell's Portable NetWare and Microsoft Corp.'s LAN Manager. This gives HP the most mainstream approach when it comes to PC LAN connectivity.

Some users, however, find it is still easier to maintain separate LAN and minicomputer connections. AIGM, Inc., an insurance company in Wilmington, Del., for example, puts two connectors into each PC, one for the Token Ring LAN and another for an asynchronous connection to the HP 3000. The users access the HP directly for application processing.

"Eventually, we'll get asynchronous connectivity over the LAN," notes Marty Hupka, vice president of systems at AIGM. •

A place for minicomputers

How do you see the future of the minicomputer? Response base: 119	
Mission-critical applications host	18%
Eclipsed by other architectures	15%
File server for PC networks	11%
Transition to LAN architectures	7%
Other/Don't know	49%
Will your minicomputer ever be incorporated into an open systems strategy?	
Yes	55%
No	34%
Don't know	11%

Source: CW Buyers' Scorecard

Opinion

Cut to the chase!

By William Sines

Let's get past "Mainframes forever" and "PCs rule the world." It's time for some straight talk and level-headed thinking.

American business today is in a state of massive transition, with nearly everyone rethinking fundamental business assumptions. Chief information officers and information systems management are playing a direct role in this process or are strongly influenced by the outcome. In just a few short years, they have focused on business and placed "gee-whiz" technology in its proper context.

Of all the concerns weighing on IS executives today, the most immediate is controlling costs and managing the IS budget. Recent studies indicate that fully 80% of major corporations are interested in downsizing. The reason behind this reinvestment? Cost reduction.

It's too early to tell how successful this effort will be. There are indications that many organizations moving toward highly distributed PC solutions are experiencing significant difficulties. One out of three CIOs will probably not survive many of the latest downsizing efforts.

The truth is, one size does not fit all. While some companies will find that highly distributed LANs fit their skill set and business requirements, others — 20% of the downsizing movement — are taking a more low-risk approach and opting to rehost applications on minicomputers/servers.

This more prudent approach does not imply that CIOs should select yet another proprietary lock-in.

A strategic vendor-neutral standards domain must be established to guide future migrations and maintain an architecture flexible enough to meet future requirements.

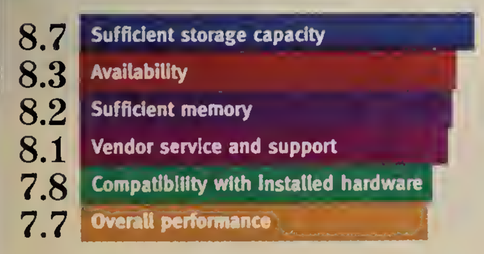
Choosing between minis and PC LANs is not the issue.

It's time for vendors and integrators to cut the technical hype and address the serious issues facing IS professionals.

Sines directs research of rightsizing and the open systems movement at Technology Investment Strategies Corp. in Framingham, Mass.

Data General's MV Eclipse

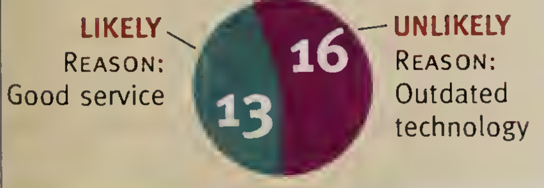
Response base: 29 users



LIKES: "It is reliable and gives us good performance for the price."

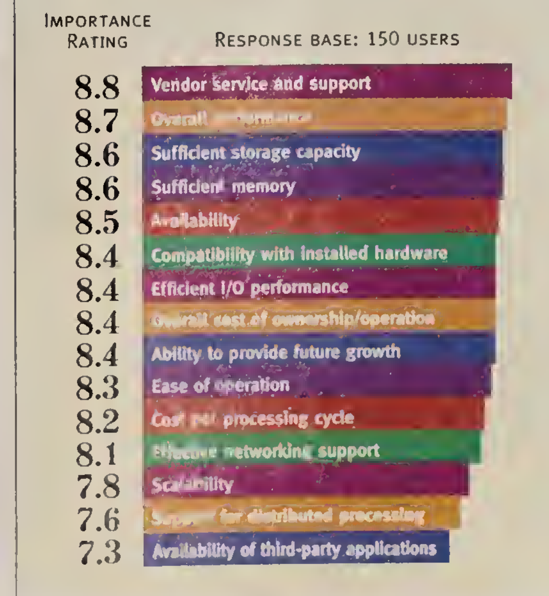
DISLIKES: "The proprietary operating system and lack of third-party software."

Would you buy the product again?



Ratings in order of importance

Users rated the following categories on a scale of 1 to 10, where 1 is least important and 10 is most important.



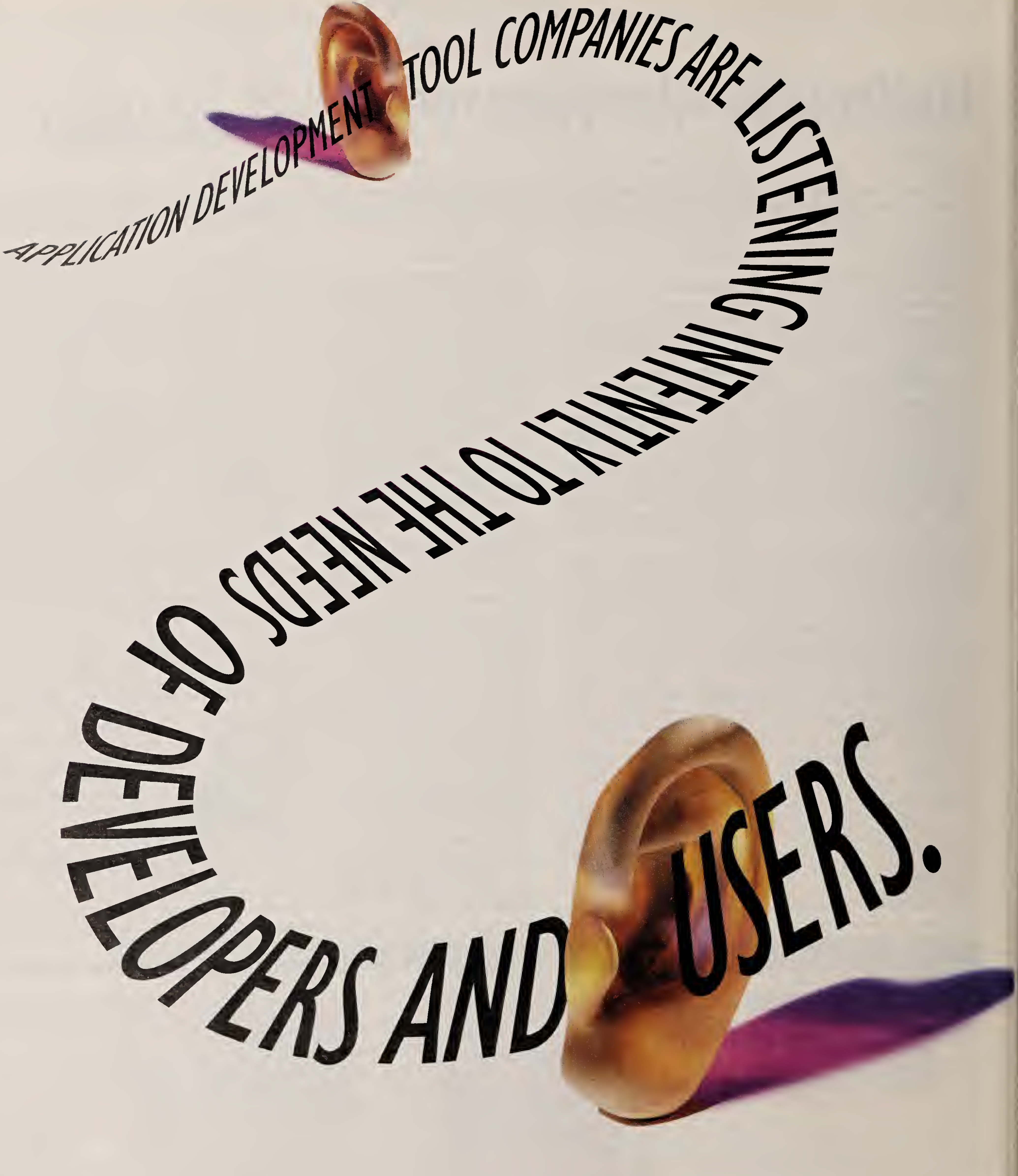
BUYERS' SCORECARD METHODOLOGY

Buyers' Scorecard records users' satisfaction with their installed technologies. Users assigned 1-to-10 ratings based on their satisfaction with their minicomputers in 15 specific categories. Users also rated the importance of each category.

User names were obtained from nonvendor sources. First Market Research, an independent data collection company in Austin, Texas, conducted the survey and tabulated the results. The response base was 29 users for DG's Eclipse MV and 30 users for each of the other products. Users rated their satisfaction with their installed products and were not asked to compare or rate one product against another in the survey.

To compute the overall score for each product, perform the following: 1) Multiply the product's score in the first category by the user importance rating for that category to obtain the weighted score. 2) Repeat the process for all remaining categories. 3) Average the resulting figures for the average weighted score. 4) Convert the average weighted score to base 100; the ratio of the average weighted score to the average user importance is equal to the ratio of the overall score to 10. Numbers are rounded off where necessary.

Computerworld thanks the following firms for their assistance in preparing this Buyers' Scorecard: CW Database Division; International Data Corp.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In Depth

The case of the
BLUNTED BUDGET

What's a CIO to do when he's got a lot less money to work with next year?

LINDA BLECK

What follows is a case study of an IS department in turmoil because of a budget cut. While the case is fictitious, the issue it raises — making trade-offs in tight times — is very real. We asked a trio of experts to offer their advice on how to handle the situation.

VIP advisers

Here is the list of industry notables who will give Ken and Ann their opinions, beginning on page 89:

John J. Alexander is senior vice president and chief information officer at Unum Life Insurance Co. in Portland, Maine. Prior to joining Unum in 1987, Alexander held positions as senior vice president of information systems at MCI Communications Corp. and as executive vice president and chief operating officer at the Midwest Stock Exchange. He is an organizer of the CIO Council of Maine.

DuWayne Peterson is head of DuWayne Peterson Associates, an IS consultancy in Pasadena, Calif. He is former CIO and executive management committee member at Merrill Lynch & Co. in New York and has held high-level IS positions at Security Pacific Corp., RCA Corp. and Citibank.

Stuart Scantlebury is senior information technology/systems consultant at McKinsey & Co.'s Cambridge, Mass., office. He has spent 18 years in management consulting, focusing on information technology strategy, planning, design and development.

********Priority receipt********

DATE: Dec. 18, 1992 TIME: 8:30 a.m.

TO: Ann Pangborn, IS manager
FROM: Ken Thompson, CIO
RE: Budget

Ann, just an E-mail note to let you know that the budget numbers came down from corporate. It's not good news: We're getting 10% less than last year. John Dillworth says the Cromwell Financial acquisition, among other things, squeezed us a bit more than expected. He and the other financial guys are being very frugal.

Let's meet Monday at 9 a.m. to discuss what we have to rethink in light of the new financials, OK? Keep in mind one thing: The word from Dillworth is to keep plans for the front-line sales force automation system as is. He wants to make sure our 200 field insurance sales reps get their portables for lead tracking and customer support information. You know what he always says: "An insurance company with uninformed sales reps is like a headless man."

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**********Priority receipt********

DATE: Dec. 18, 1992 TIME: 8:40 a.m.

TO: Ken Thompson, CIO
FROM: Ann Pangborn, IS manager
RE: Budget

Ken, looks like we're going to have to make more than a few trade-offs to deal with the cut. Not that I disagree with Dillworth. Apex Insurance's reps have been doing a better job against ours ever since their field system put data at the reps' fingertips.

But last quarter's hiring freeze has put us at a disadvantage; with Rick leaving this month and no money to replace him, we're in a bind. He's our best user support person by far. When the sales system comes on-line, we're sure going to miss him. I don't think it's unreasonable, given the hell we went through to bring our 50 offices onto one LAN backbone last July, to double the installation and support estimates.

Oh, yeah, we'll also need to ensure that updates and maintenance for accounting and customer applications on the mainframe aren't affected. I don't know, maybe we should bring in that outsourcing vendor rep again and listen to what he has to say.

Something's got to give. The question is, what?

**********Priority receipt********

DATE: Dec. 18, 1992 TIME: 8:45 a.m.

TO: Ann Pangborn, IS manager
FROM: Ken Thompson, CIO
RE: Budget

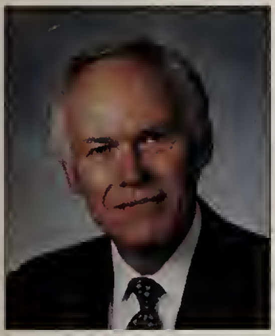
I've got certain ideas on what we should do, and I warn you, some of them are heretical. But I don't think status quo does the trick anymore. Did you see Apex's quarterly results posted on the EIS? Its revenue has grown, likely at our expense, by 5%! And who knows who else is lurking out there. We're still No. 1 in the region, but the pressure is on. And I'm feeling it.

I'll be in an executive staff meeting for the rest of the day, so please hold down the fort. Here are some strategies to think about before Monday's meeting, and yes, let's add outsourcing to the list as well as anything else you've got. We'll talk about the pros and cons then:

- Turn over more development and support to end users.
- Cut down on service levels to nonstrategic systems.
- Turn down "small" or "inconsequential" user requests.
- Purchase more off-the-shelf software.
- Buy used hardware.

Try benchmarking, overseas coders

By John J. Alexander



Ken and Ann, I hope you find it comforting to know you are not alone. Most CIOs are in the same boat: Every business is looking for more results from the IS function at lower cost and with better quality.

At a strategic level, many firms are striving to become more focused on their customers, moving systems and services closer to the point of origination and, in doing so, raising the value and reducing the cost.

To achieve a true customer focus, think about "ruthlessly prioritizing" your planning process — working from the products and services the customer values (and is willing to pay for) back into the business, eliminating all less-important activities en route.

Ken, the alternatives you and Ann are considering are good but may not go far enough. For example, if you have some programming project work that is well-defined, why not get quotes from off-shore vendors in Ireland or India that have done good work for other U.S. companies? The programmers speak English, are educated and let's face it: They produce quality results at a low cost.

I used a firm in India for two programming projects here at Unum and found I saved 20% to 50% on the cost of software development.

Off-loading some of the routine programming work can help alleviate the stress and strain on your already burdened staff (which is about to become more burdened once Rick departs).

I must reemphasize, however, that programming projects you farm out should be well-defined. If you don't know where you are going, you don't ask the Cheshire cat which path you should take.

Another strategy you might consider is to benchmark your data center operations against that of world-class competition. There are several organizations out there, including Compass America, Inc., that have comprehensive databases containing information on IS sites. You can segment your data center into half a dozen pieces and benchmark each piece against that of sites in the Top 10% of the database.

In this way, you can see whether your data entry, production scheduling, tape library, computer operations or system software pieces are good, bad or indifferent in comparison to the Top 10 percentile of sites.

What Unum found was that we were 5% better overall than Compass' top sites. However, we tended to be really good in some areas and not so good in others. For instance, we didn't have automatic tape libraries in place and were overstaffed in the tape library area. Benchmarking ourselves against that group enabled us to justify an investment, change our strategy, downsize our staff and really improve that piece of the operation.

As for bringing users into the IS equation, I'm all for it. PC users have demonstrated an ability to employ technology and put it to good use when it's packaged well. For example, word processing, spreadsheet and electronic mail have deeply penetrated most enterprises. Why not consider turning over the data reporting functions to users?

Finally, you've got to make your business managers understand that buying "cheap" vs. quality never seems to pay off in the long run. Technology decisions cast long shadows; when some companies bring in new technology or build a system, they have to live with it anywhere from five to 15 years. The insurance business tends to be at the high end of that range.

There is a trade-off between making an investment up front that will pay off in the long term vs. buying cheap. If your business managers understand what resources cost, they can climb the learning curve.

You need to have in place a well-designed chargeback system that prices resource use within the organization so that business managers understand the relationship between work done and cost incurred.

I hope these thoughts help you achieve the results your business needs.

Ken's missing piece is better planning

By DuWayne Peterson

ALAN LEVENSON

Ken, the situation happening at your company is occurring over and over again in organizations around the country. Companies are finding themselves under profit pressures that can't be relieved easily. Economic and competitive forces are keeping revenue down. For most companies, expense reductions are the only way to hold the company steady.

Your company has reacted to pressures like so many other organizations: quick, across-the-board reductions in the budget, hoping there will be little or no disruption to strategic IS projects and the company as a whole.

Unfortunately, however, the sense I get is of a company and systems organization that is reactive and isolated.

Ken, I don't think most of your recommendations will result in any meaningful changes. Ann's initial response indicates frustration. I can guess these approaches have been used before to no avail.

You and your IS group should not be in this position in the first place. How can you avoid this situation from happening again? An effective IS organization should have the following processes in place to deal with the profit pressure:

- First, you need a business planning process that states in clear terms what each business unit needs to do to achieve the profit objectives of the firm. It is incumbent on the IS chief to coordinate systems plans with these business plans and strategic projects. Ongoing support costs need to be factored into these profit objectives.
- Second, you need a financial system that tracks all revenue and expenditures to measure whether you've achieved your profit objectives. The system should include all costs for supporting the business, including system development projects and operating costs. This setup implies some form of chargeback system based on business transactions and project expenditures.

The financial system may demonstrate that turning over more development and support to end users will not necessarily result in increased profits in the business unit. Rather, it may show a movement of costs from one side to the other.

With these two processes in place, you can deal with the issues your company is facing now and in the future, as conditions change. You will be prepared if a major change of events — even another acquisition — occurs.

Ken, you've got to challenge each business unit to provide an action plan on how they will improve their performance. Would it be in the best interest of the company to exit certain tangential businesses? Should the company reduce support? Is it time to re-engineer the business process?

Any one of these business-motivated actions, aided by technology, can cut back on activities and, therefore, reduce costs. The financial system you've put in place will help evaluate the impact of recommended actions.

What's key is that you've got built-in business management participation and support.

Peterson, *page 92*

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Sources: Dataquest Ledgeway, 7/92; COMPAQ News Release, 10/5/92.

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IBM

Continued from page 89

Of all your suggestions, I think the most substantive one is outsourcing. Outsourcing can be one of the most important ways to reduce costs. It can help deal with the limited business resources and skill levels that will be available in future years.

It's unfortunate, however, that you've brought up this recommendation in a crisis atmosphere. Again, this shows a lack of an orderly planning process.

You must first classify all of your IS functions as either "essential" or "nonessential." Only then will you be prepared to think about outsourcing nonessential functions as cost and skill pressures increase. Only when you've strategically evaluated your IS resources can you make an informed decision.

Ken, it is never too late to begin to put these processes in place. Meet with Ann, CFO Dillsworth and other key systems and business managers and start down this new road together.

First step: Fix management structure

By Stuart Seantlebury

Ken, I think you have a bigger problem than you may realize. The potential strategies for dealing with your budget cut would only provide symptomatic relief. They would not address the root causes of the crisis: The management structure is not conducive to managing IS for maximum business value.

Many IS organizations are in the same position as yours. IS reacts to user requests and corporate directives rather than acting as a partner with the business leaders of the company. Until you and top management change the way you view and manage IS, you will continue to have such problems year after year.

Your E-mail message to Ann about budget numbers coming down from corporate shows you were not a key participant in the budget decision process but rather a victim. And the round number for the cut — 10% — makes me think that you're talking about an across-the-board 10% cut. At the very least, it seems to indicate that not much thought was given to what makes business sense to spend on IS.

In addition, comparing the budget to last year's budget smacks of bureaucracy, not zero-based budgeting.

Certainly, CIOs in a proactively managed IS organization may need to cut their IS budgets, but they would do so based on a joint decision-making process carried out by the top management team. It is imperative that the CIO is a full member of this team. The group would conduct a review of every ongoing activity and potential investment opportunity throughout the company to determine which expenditures will yield maximum business value.

It seems to me that the sales force automation system is being saved not because the top management team decided it provides maximum business value compared with other potential projects but because of one man's opinion. The CFO should not be allowed to protect a pet project.

The executive staff needs to make major decisions on new systems investments as a group. Fortunately, Ken, you are considered a member of the executive staff; many of your colleagues at other companies are not. Use your influence in these meetings to push for investments that provide maximum value to the business as a whole.

Perhaps the front-line sales force automation system makes sense, but it should be part of an integrated business system of people, policies, procedures, technology and incentives, starting at the front line and extending through all functional areas involved with the core process of insurance policy sale and generation (underwriting, actuarial and policy production).

And one last thing. I think you're going to have to replace Ann. You need an IS manager who can focus on strategic issues, develop her own recommendations and communicate them effectively. The second paragraph of her E-mail message to you is completely off the subject. Her approach to management is summed up in, "I don't know, maybe we should bring in that outsourcing vendor rep and listen to what he has to say." The last thing you want to do is rely on a salesman for advice. •

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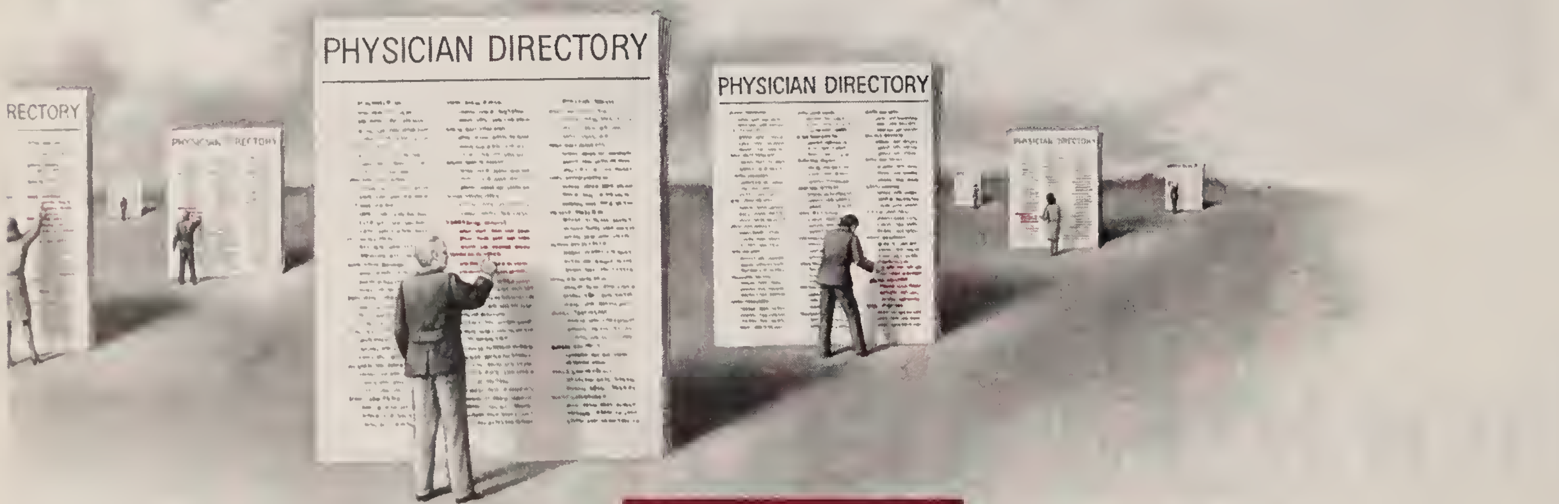

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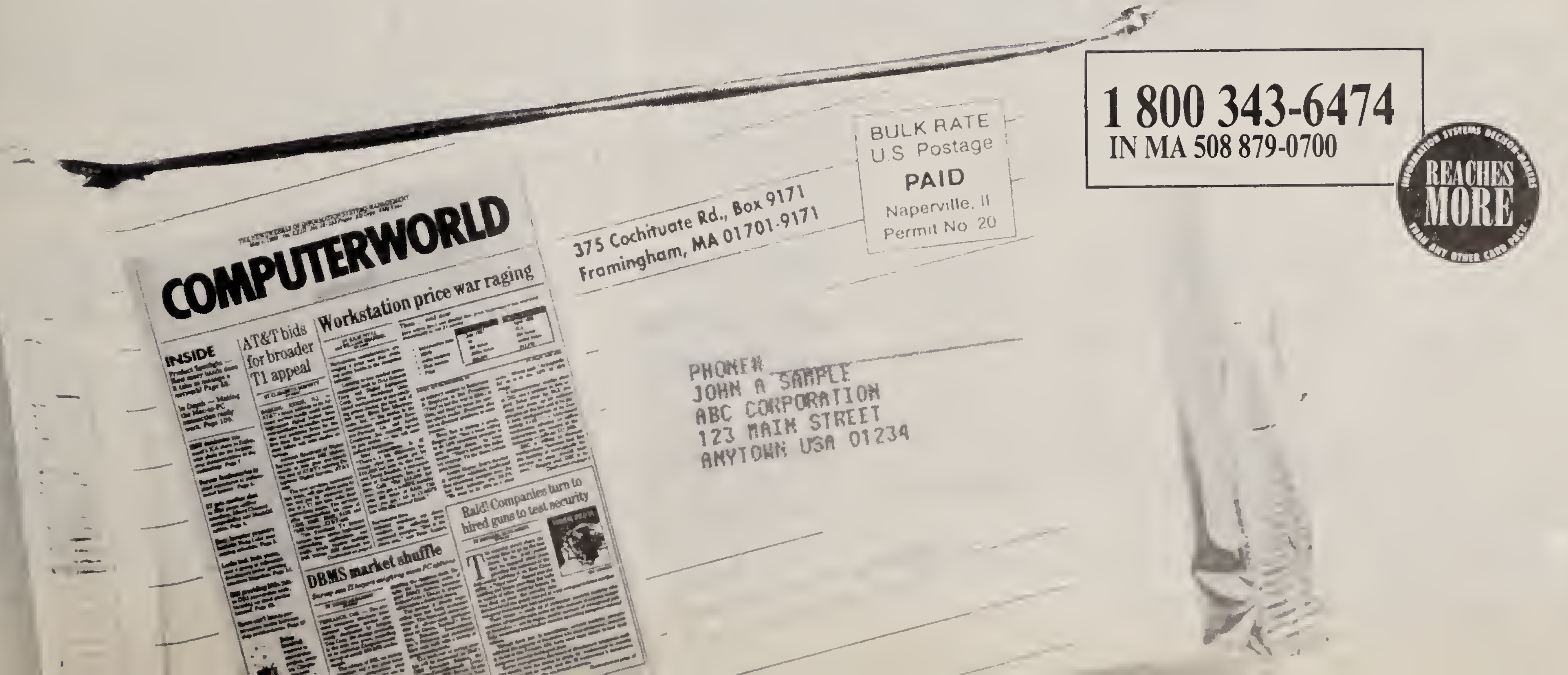
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The rise of technical stars

By Sheryl Kay

Five years ago, Jim Jenkins supervised a group of 10 systems programmers at GTE Data Services, Inc. (GTEDS) in Temple Terrace, Fla. Because of a shortage in staff, however, he often found himself performing technical duties, and soon he realized he felt most comfortable in that capacity.

"Dealing with people as their manager was a struggle for me," Jenkins says. "I prefer to only worry about myself."

Fortunately, GTEDS offers information systems employees the option of building a career in either direction — a technical track or a management track. The pay is comparable in both tracks, so Jenkins was able to maintain his salary when he chose to leave management for a technician's position.

Today he is an advisory systems engineer at GTEDS, working as an internal consultant in capacity planning, performance and tuning.

According to Jack Schwartz, Source Edp's area managing director in New York, highly placed technical professionals like Jenkins typically prefer to manage their own projects or product development rather than manage people. They are very senior-level technicians who possess in-depth knowledge of one or more facets of automation, such as operating systems, databases or communications.

Historically, companies offered IS professionals only one mechanism for advancing their career: a move into management. This posed a problem both for those who entered the field because of their keen interest in technology and for those who disliked the administrative tasks required of a manager.

Increasingly, companies around the country are recognizing the value of such technical contributors. "They're the backbone of support for technology in an organization — the walking, talking manuals," says Ron Cybyske, senior vice president for information services at Banc One Services Corp. in Columbus, Ohio. "They take complex business issues and translate them into the language of the computer."

Corporate America catching on

Such senior-level technical tracks are becoming more common. Most of these positions are found at technology-driven companies such as software vendors or systems integrators. But these professionals are also scattered across corporate America. In fact, some predict that this population will begin to grow as applications programming becomes more the responsibility of end-user departments.

"With the lights-out data center and continued end-user computing will come an increased need in IS for highly trained technical support professionals," notes Ephraim McLean, professor and Smith Chair of IS at Georgia State University in Atlanta.

Projects that may be assigned to these technical professionals include systems programming, database administration, network administration, research and development, capacity planning and technical evaluations.

Historically, managers and high-level technical professionals have not been paid the same. It is only in the last five to 10 years that senior-level technical professionals' pay has come up to the level of their management counterparts. But while the salaries are on par, perks such as bonuses are not; traditional managers still bring home more in total compensation.

People who reach this level have to perform many of the same functions that managers do, although they don't manage people. They must have the same planning and prioritizing abilities that managers need, observes Derry Kabcenell, vice president of relational database management systems development at Oracle Corp.

The primary lures to a career as a technical contributor, Cybyske notes, are the instant gratification one receives in such a position when a technical issue is resolved and the ability to receive ongoing acknowledgment and status.

And there are other positive aspects of the technical contributor's job. Perhaps most importantly, technicians are not tied to one industry. "I can always sell skills no matter what happens to any company I'm with," notes Ken Breckenridge, corporate systems consultant to the CEO at Affiliated Computer Systems, Inc. in Dallas.

Hours may also be an issue. Individual contributors are often required to work long or odd hours to resolve technical issues. "I couldn't be in any other profession — except for maybe a doctor — and get a call from a woman, get up and leave the house, and my wife doesn't ask any questions," Breckenridge says.

Kay is a Tampa, Fla.-based business consultant and free-lance writer specializing in emerging technologies.

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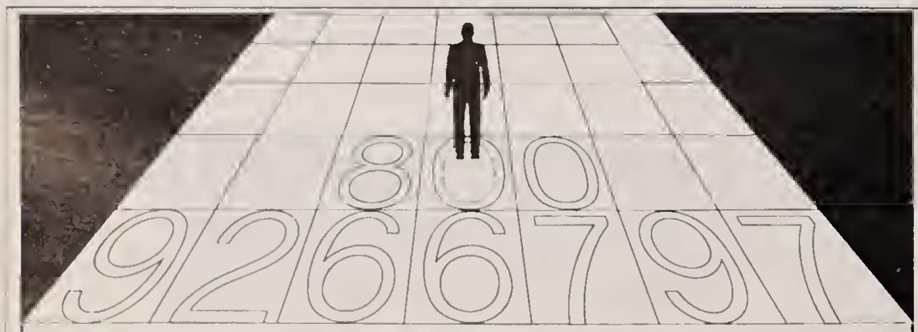

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Putting your feet in someone else's shoes

By Jill Vitiello

Imagine for a minute that an information systems genie appears in your cubicle and presents you with a 24-hour opportunity to trade places with anyone in the computer industry. Whose job would you want to take? What position would you want to try?

We're no genies, but we spoke to a number of IS professionals to find out how they would spend such a day if the opportunity arose. Surprisingly, a significant number say they wouldn't want to change at all. But roughly one-third of those surveyed reveal they would leave their traditional IS jobs to work as researchers at vendor companies. Another third crave power and would spend the day as an industry leader. Let's see why.

Tech meisters

Being on the cutting edge of technology appeals to Mark Scott, microcomputer specialist at Memorial Hospital in Chattanooga, Tenn. He says he would like to spend one day as a NetWare engineer at Novell, Inc. to get a jump on new products that will be introduced to users. Scott is studying to become a certified Novell engineer and sees NetWare as the hottest, most exciting IS technology right now.

On the other hand, "I'd like to be a researcher at IBM," says Doug Colbert, a programmer/analyst at Continuum, Inc. in Austin, Texas. "It would be great to find out what IBM is up to so you don't outdate yourself as soon as you put your code down."

Spending one day as a Bell Laboratories research technician would teach Ronald Garffie some interesting things about micro circuitry. A programmer at Agrex, Inc. in Overland Park, Kan., he says he feels this would give him insight into other areas of the computer field. He'd also like the opportunity to learn more about the ins and outs of his line of business, perhaps by exploring agricultural technologies.

View from the top

"I'd like to see what Bill Gates goes through in a day," says Charles Bedekovich, data processing manager at Employee Benefit Claims, Inc. in Pittsburgh. Bedekovich considered being other industry leaders for a day but couldn't resist Gates' wealth.

"What keeps Gates going to the office every day?" Bedekovich muses. He surmises Gates' motivation isn't simply picking up a paycheck, sizable as it is, but rather the excitement of pushing the industry forward. Bedekovich says he believes he'd return from a day as Bill Gates with a new industry perspective, some management ideas and a glimpse of a brilliant mind.

Leaving industry and global views to others, Tom Durban, senior programmer/analyst at Delta Airlines in Stone Mountain, Ga., longs for the chance to get a corporate overview. How? He'd spend his 24 hours as vice president of communications and information services at his company. With roughly 1,700 IS employees reporting to that position, it would be no small feat.

"What an opportunity to get a better understanding of the big picture," Durban says. "It would be really interesting to get the feel of what goes on in corporate strategy, life and politics at that level."

Stephanie Faucher

Some high-level people are perfectly content with their jobs and say they would prefer to leave that big-picture view to their higher-ups. They have had plenty of exposure to their bosses' jobs and have seen that the top posts come complete with their own headaches.

"I like my job just fine," says Mark Briebart, IS manager of the cardiology department at Children's Hospital in Boston. "I wouldn't want anyone else's problems."

He heads a small group of IS professionals dedicated to working with the hospital's cardiologists, who Briebart says are computer-literate, savvy users.

Satisfied IS professionals such as Jack Parsons, director of systems and programming at Atlantic States Bankcard in Raleigh, N.C., say their present jobs provide plenty of challenges.

"I'm happy with what I do," says Parsons, who would also decline any offer to take someone else's place for a day. With 12 people reporting to him and new projects on tap, he says he never runs out of work — and that's just the way he likes it.

Joe Backes agrees. The network manager at The Bowlin Co. in Shreveport, La., says he gets a kick out of troubleshooting problems and wouldn't want to change jobs with anyone else, even for one day.

Roberta Young-Jackson wouldn't want to change, either. But if she was forced to trade, she says she would like to get a taste of being a systems analyst for a day. Young-Jackson says she thinks the experience would make her a more effective computer users' coordinator, which is her current job at the computer center in Randolph Macon College in Ashland, Va. But, she demurs, she enjoys the academic environment of the college and wouldn't want to leave it.

Vitiello is a free-lance writer based in East Brunswick, N.J.

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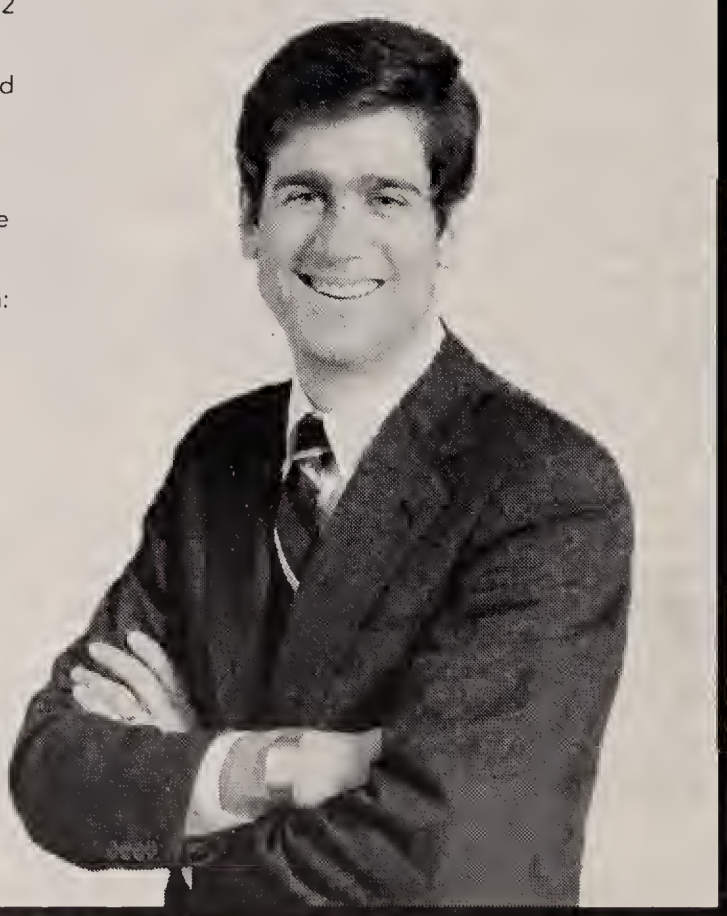

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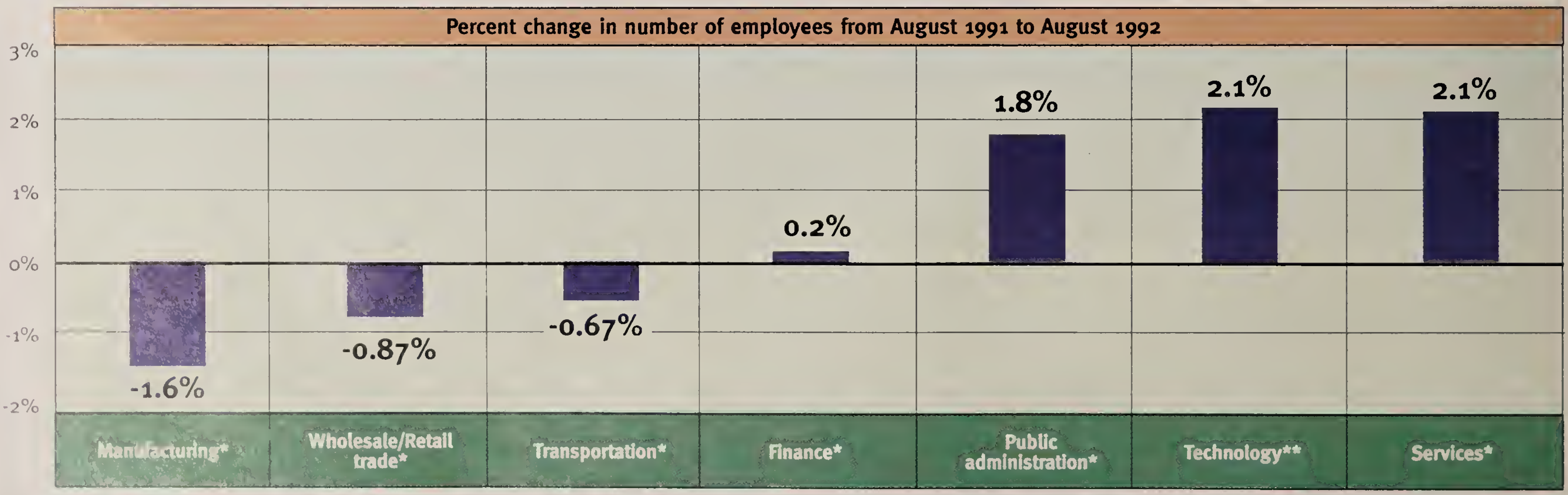
Computerworld/CorpTech Career Index

Services and technology take the high road while manufacturing and retail take the low road



*Source: U.S. Department of Labor, Bureau of Labor Statistics

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Because of our long-term recruitment success, we continue to place 100% of our national media advertising in one publication. Computerworld.

-*Stephen J. Kukoy*
President
National Computer Associates

Stephen J. Kukoy is not only President of National Computer Associates, but also President of Abacus Consultants, Inc. in Denver. Having been in the recruitment business for nearly 15 years, he knows the critical role advertising plays in finding the best qualified professionals. He also knows where his recruitment advertising dollars are best spent.

Founded in 1971, National Computer Associates (NCA) is an exclusive group of private firms dedicated to importing and exporting computer personnel on a national basis. With an active membership of 30 firms throughout the United States, Great Britain, Canada, and Australia, NCA is virtually a network of "branch offices" working together to place the best qualified IS professionals in the right jobs. Today, NCA's aggressive growth and strategic market positioning make recruitment advertising more important than ever.

"Since *Computerworld* is the most respected professional newspaper for computer professionals, we believe it's our most direct means for reaching our entire target audience - programmers, systems, analysts, and IS directors ... operations, technical support, telecommunications, and PC professionals ... even vice presidents and presidents. And with its national reach, *Computerworld* is the perfect place to tell these IS professionals about how NCA, with its pooled resources and industry expertise, offers them a wider variety of jobs in more companies in just about every location.

"Because of our long-term recruitment success, we continue to place 100% of our national media advertising in one publication. *Computerworld.* Time after time, *Computerworld* produces top-calibre candidates - qualified professionals who are truly interested in keeping their careers abreast of the industry's rapid changes and trends.

"Looking ahead, we expect several factors to escalate our recruitment advertising needs - the growing demand by clients for greater selectivity, an increasingly specialized industry, a continually mobile marketplace, and NCA's expansion into the lucrative European marketplace. As this all happens, we intend to increase our advertising budget in *Computerworld* proportionately.

"*Computerworld* recruitment advertising has been equally successful for Abacus Consultants. Although we've experienced many such situations, one specific instance comes to mind. After local advertising proved unsuccessful for finding a particularly hard-to-find individual in the Denver area, the client gave us the go-ahead to advertise nationally. We ran one recruitment advertisement in *Computerworld* - and got an instant response from just the candidate we were looking for - right here in our local area. It just goes to show that *Computerworld* delivers far better candidates than any other source.

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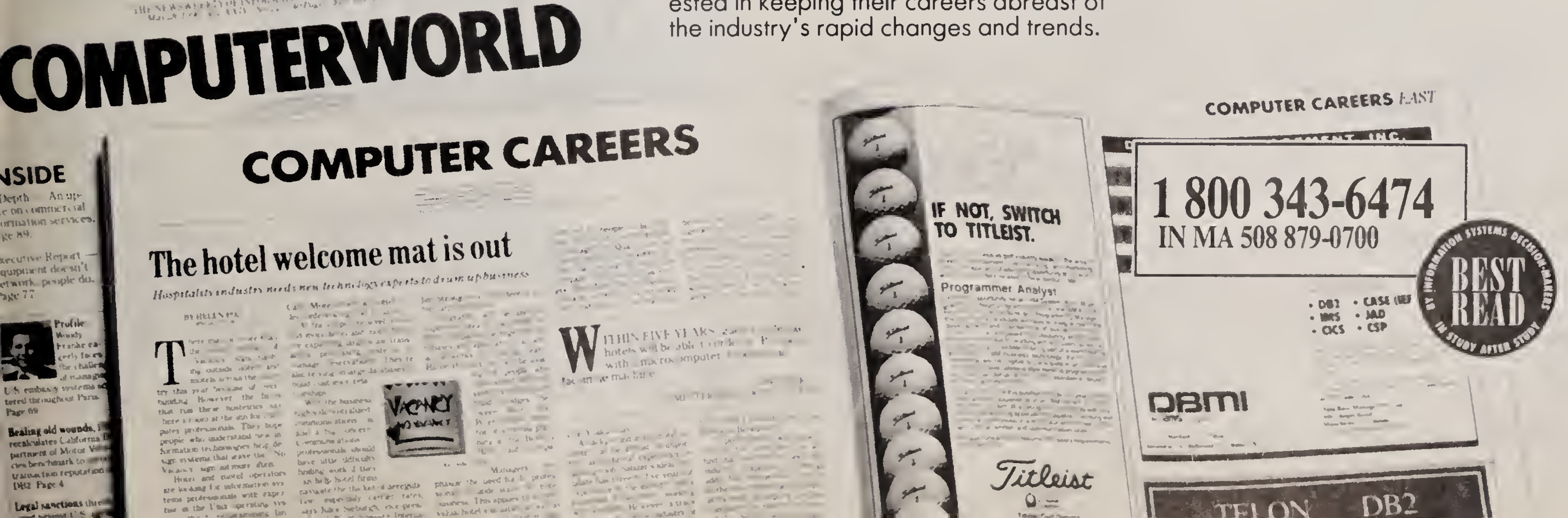

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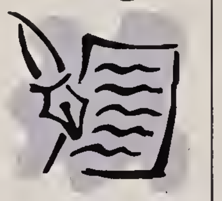
You can't be too cautious making a deal

Misleading product marketing verbiage, vendor stalling practices, "trust us" ploys — you name it and buyers have to deal with it. While these problems may not be encountered every day, buyers only have to fall prey to them once to damage a deal they have been working on. In this week's Shopper Alert column, buyers and consultants share a few of their experiences with dirty dealers. While companies that practice these tricks are in the minority, it is best to keep an eye out and avoid them altogether.

'We don't need to put that in writing'



■ Put up your guard when you hear this one. Some vendors encourage their sales staff to create personal relationships with clients for their own gain. Often, their aim is to de-emphasize the importance of including certain vendor commitments — such as standing behind product performance and reliability — in the written agreement.

Once established, personal relationships can sway normally cautious executives into accepting a salesman's spoken assurances on a variety of technical and legal points.

In many cases, the vendor's rep never had the authority to make the commitment, and vendor management will not accept the burden of fulfilling the promise. The vendor may also change its original position to offset reduced earnings or to intimidate the user into upgrading his system.

The key rule in avoiding this is simple: "If it's not in the contract, it's not part of the deal." Also, buyers should never sign the vendor's standard form agreement, and buyers should always involve their attorney or other professional advisers early in the negotiations.

— Joe Auer, president of International Computer Negotiations, Inc. in Winter Park, Fla.

Come across any questionable selling practices? Call in your experiences to Jodie Naze at (800) 343-6474, X727 or fax them to (508) 875-8931.

Real video adapters?

■ Some vendors have been making an easy buck by selling PCs they claim come with coprocessed video adapters, when in reality they are only a clone Video Graphics Array board with the S3 chip on it. This chip is not coprocessed. It simply has Microsoft Corp. Windows drawing functions encoded in the hardware. Phony coprocessed video adapters are substantially less expensive and slower than a true programmable coprocessor. To be sure, ask the vendor to explain whether the board is accelerated or coprocessed.

Todd Henschell, PC consultant and freelance writer based in Burbank, Calif.

Truth in advertising?

■ Don't believe everything you read. When resellers — particularly resellers of cheaper systems — advertise hard disk capacities they usually don't tell you that the figure listed is the *unformatted* capacity of the disk. You generally lose 5% to 20% of the disk's capacity when you format it, and depending on the computer's BIOS, you may lose more if it's a partially supported drive type. To avoid any unpleasant surprises during installation and setup of the system, establish that the figures quoted by the vendor are "usable" megabytes.

— Todd Henschell

'We can't do that; it would set a precedent'

■ Vendors say this when they don't want to grant a requested concession for discounts, guaranteed uptime, extended warranties and the like. They argue that if the request is granted, they would be forced to make similar concessions for other buyers.

This is difficult to rebut because buyers can't know whether the vendor has granted the same or a similar request to another user. They also do not know whether the vendor would really have a "precedent" problem if it conceded. To counter this, have the vendor restate its "precedent policy," and demand a list of previous concessions.

If the vendor claims there is no list or prior concessions (an unlikely event), ask how it can talk about precedents and what it can or cannot do if it doesn't have a list.

One tactic to use early in the negotiations is to ask the vendor to include a "most-favored nation" provision in the agreement. This states that if a better price or broader concession has been granted before, the vendor is obligated to provide the same concession to the user.

One caveat to be aware of is the use of "side letters" to grant concessions. All well-drafted vendor agreements include a provision that states the contract itself is the only binding agreement among the parties, and no other documents will be binding unless formally incorporated into the contract.

— Joe Auer

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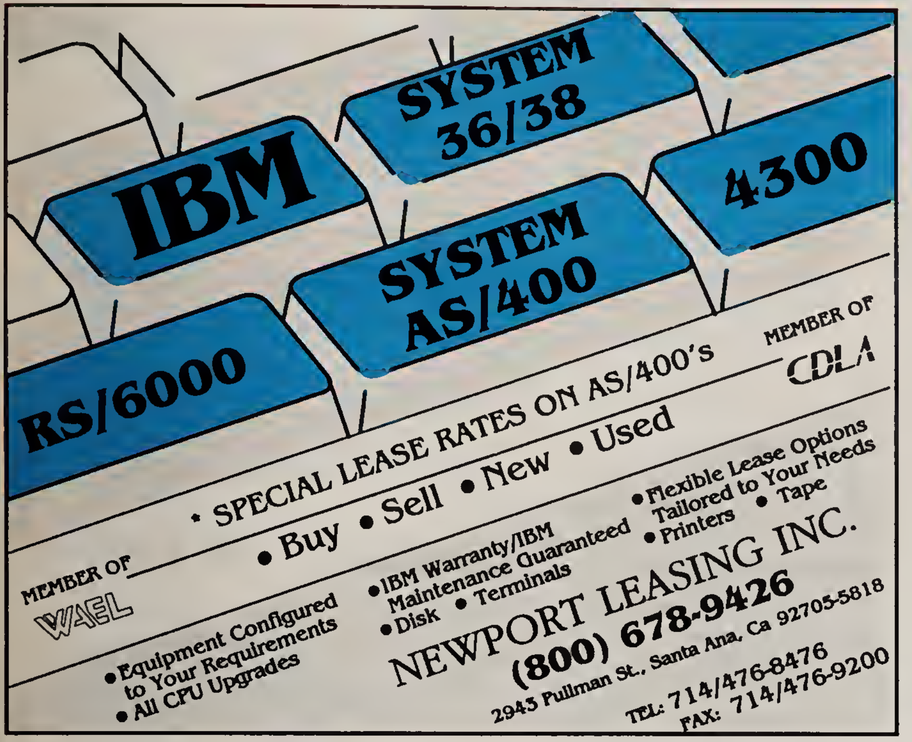

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NOTICE OF PUBLIC SALE

On December 9, 1992 at 10:00 a.m. at the law offices of Lowenthal, Landau, Fischer & Bring, P.C., a public sale will be conducted by James E. Beckwith or any member of the law firm of Lowenthal, Landau, Fischer & Bring, P.C., on behalf of UNIQUEST INCORPORATED ("Secured Creditor") of the following assets of Concept Systems Inc., a Pennsylvania corporation, Concept Holding Corporation, a Delaware corporation and AIS Incorporated, a Utah corporation with their principal locations at The Wanamaker Building, 100 Penn Square East, Suite 800, Philadelphia, PA 19107 (collectively the "Debtor"): (a) accounts, including, without limitation, all rights to payment for services or inventory (however arising), leases, chattel paper, contract rights, instruments, life insurance policies and documents; (b) general intangibles (including, without limitation, inventions, designs, patents, patent applications, trademarks, trade names, copyrights, leasehold interests, tax refund claims, guaranty claims, and security interests or other security held by Debtor to secure accounts); (c) inventory including without limitation, returned and repossessed goods, raw materials and work-in-progress; (d) goods, equipment, vehicles, and fixtures, together with accessions thereto and replacements parts therefor, but excluding all property used exclusively for personal, household or family use; (e) all monies, accounts, deposits and property in the possession or under the control of Secured Creditor or its bailee; (f) all books and records, including, without limitaton, customer lists, credit files, computer programs, printouts and other materials and records pertaining to any of the foregoing; (g) all documents of title evidencing or issued with respect to any of the foregoing, and (h) all proceeds and products of all of the foregoing, including, without limitation, proceeds of insurance policies insuring the foregoing.

All bidders at the sale will be requested before the bidding commences to disclose their names and addresses and agree to the terms of the sale hereinafter set forth and set forth in the rules and procedures of sale distributed at the time of the sale, if any.

The highest bidder shall be required to deposit with Secured Creditor, as secured creditor, a sum of money equal to 10% of the aforesaid bid, with the balance to be paid within five (5) days thereafter. Failure to make such deposit of the balance of the highest bid will result in forfeiture of the earnest money deposit and the property shall be sold to the next highest bidder or at another public sale.

Secured Creditor makes no representations or warranties as to the condition of title to the property or as to anything else.

Secured Creditor reserves the right to accept or reject any or all bids either at the sale or within twenty-four (24) hours thereafter, to accept partial payments thereon, and to waive any and all requirements of deposits, and to adjourn, continue, or withdraw such sale as it deems fit, without further notice.

For further Information on this matter, contact the following:

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Sealed proposals will be received by CDPA, 301 N. Lamar St., 301 Bldg., Suite 508, Jackson, MS 39201 for the following:

RFP No. 2287, due Mon, 12/14/92 at 3:30 p.m. for a computerized voice processing system for dictation for the DEPARTMENT OF REHABILITATION SERVICES. No Charge.

RFP No. 2288 due Fri, 12/11/92 at 3:30 p.m. for 25 80386 based microcomputers and various peripherals for MS GULF COAST COMMUNITY COLLEGE. Charge $10.00.

RFP No. 2293, due Tues, 12/15/92 at 3:30 p.m. for a Tape Remittance Software package for use with the PIMS system for the MS DEPARTMENT OF HEALTH. No Charge.

RFP No. 2294 due Tues, 12/15/92 at 3:30 p.m. for maintenance services for an IBM 9375 minicomputer and IBM PS/2 microcomputers and various peripherals for the DEPARTMENT OF MENTAL HEALTH. Charge $10.00.

RFP No. 2295, due Tues, 12/29/92 at 3:30 p.m. for a UNIX-based optical imaging system for the UNIVERSITY OF MISSISSIPPI. No Charge.

RFP No. 2296, due Tues, 12/15/92 at 3:30 p.m. for a forty station local area network for JONES COUNTY JUNIOR COLLEGE. Charge $10.00.

RFP No. 2297 due Fri, 12/11/92 at 3:30 p.m. for 120 gigabytes of 3390-type DASD and the needed controller(s) to replace the existing DASD capacity and provide additional DASD storage for the MS STATE COMPUTER CENTER. Charge $10.00

RFP No. 2298, due Fri, 12/11/92 at 3:30 p.m. for an additional IBM 3480-B22 tape drive with autoloaders, and an IDRC upgrade for two existing IBM 3480-A22 controllers for the MS STATE COMPUTER CENTER. Charge $10.00.

RFP No. 2299, due Fri, 12/11/92 at 3:30 p.m. for a new Front-End Processor (FEP) capable of running in native mode IBM's NCP Version 5.3 and supporting up to 50 56KB lines to replace an existing Amdahl 4705 FEP for the MS STATE COMPUTER CENTER. Charge $10.00.

RFP No. 2300, due Fri, 12/11/92 at 3:30 p.m. for 21 color 80386DX 25MHz microcomputers for the Technical Business Program for SOUTHWEST MS COMMUNITY COLLEGE. Charge $10.00.

RFP No. 2301, due Fri, 12/11/92 at 3:30 p.m. for an upgrade to an existing Novell Local Area Network for the MS DEPARTMENT OF AGRICULTURE AND COMMERCE. Charge $10.00.

RFP No. 2302, due Fri, 12/11/92 at 3:30 p.m. for a local area network for the MS STATE VETERANS AFFAIRS BOARD. Charge $10.00

RFP No. 2306, due Fri 12/11/92 at 3:30 p.m. for 50 MS-DOS based microcomputers and peripherals for ITAWAMBA COMMUNITY COLLEGE. Charge $10.00

RFP No. 2307, due Fri, 12/11/92 at 3:30 p.m. for an upgrade to the existing Intergraph network for the MS DEPARTMENT OF TRANSPORTATION. No Charge.

RFP No. 2308, due Tues, 1/5/93 at 3:30 p.m. for an upgrade to an IBM RISC/6000 System for JACKSON STATE UNIVERSITY. Charge $10.00.

RFP No. 2309, due Wed. 1/6/93 at 3:30 p.m. for the services of a consulting firm to provide professional services to conduct a feasibility study, help identify applications, and define and establish standards for the strategic implementation of imaging technology for the STATE OF MISSISSIPPI CENTRAL DATA PROCESSING AUTHORITY. No Charge.

RFP No. 2310, due Tues, 2/2/93 at 3:30 p.m. for a LAN-based, mainframe-based, or combination platform-based automated telephone management system for the CENTRAL DATA PROCESSING AUTHORITY (CDPA), BUREAU OF TELECOMMUNICATIONS. **THERE WILL BE A MANDATORY BIDDER'S CONFERENCE ON TUESDAY, JANUARY 5, 1993 AT 10:00 A.M. AT CDPA.** No Charge.

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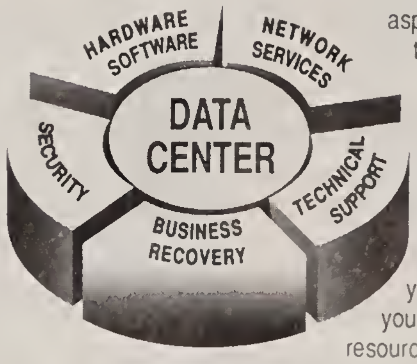

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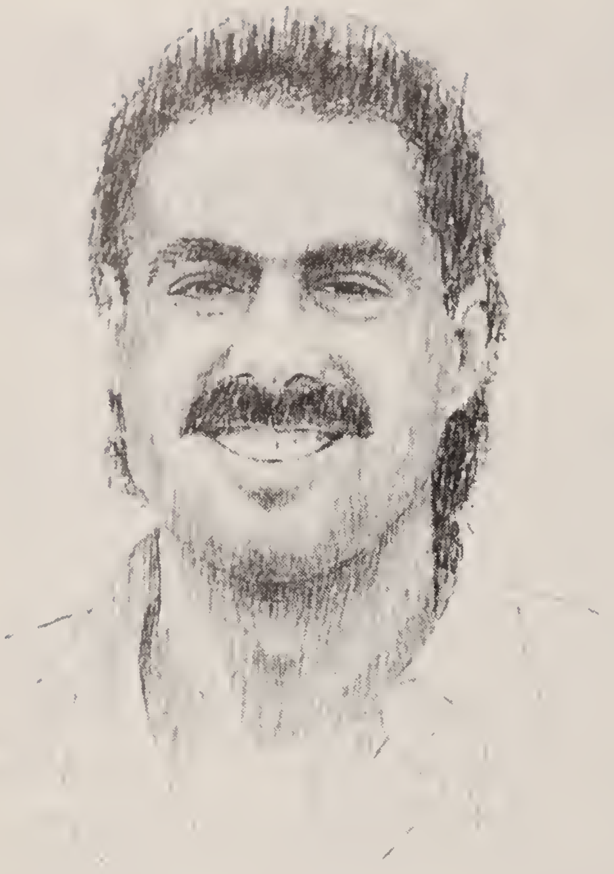

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Gainers / Losers

Percent

Gainers		Losers	
Data Switch Corp.	26.7	Spinnaker Software	-23.5
Systems Center Inc.	25.0	Phoenix Technologies	-21.2
Bachman Info. Systems	17.8	Printronix Inc.	-17.4
Ultimate Corp.	13.3	Micrografx Inc.	-17.1
Go Video	13.0	American Software Inc.	-14.6
Comshare Inc.	12.0	Zeos International Ltd.	-12.9
Filenet Corp.	10.7	Cray Computer	-11.9
System Software Assoc.	10.7	Computervision Corp.	-10.6

Dollar

Gainers		Losers	
System Software Assoc.	3.63	Microsoft Corp.	-4.50
IBM (L)	3.50	Cabletron Systems (H)	-2.38
Computer Sciences	3.13	Parametric Technology (H)	-2.00
Wellfleet Communications (H)	2.75	BMC Software Inc.	-1.75
Hewlett Packard Co.	2.63	Boole & Babbage	-1.75
3M Corp	2.50	Micrografx Inc.	-1.75
Intelligent Info. Systems	2.50	Oracle Corp.	-1.63
Filenet Corp.	2.25	American Software Inc.	-1.50

Industry Almanac

Rise and fall of storage stocks

The stock market fortunes of data storage competitors **Storage Technology Corp.** (STK) and **EMC Corp.** (EMC) have taken divergent paths during the past year. Storage Tek's stock opened 1992 at approximately 2½ times EMC's value. Early last week, however, EMC's share price was slightly higher than Storage Tek's.

Storage Tek's stock value has weathered several heavy drops, which have resulted mostly from repeated delays in the shipment of its much-ballyhooed Iceberg system. Storage Tek was approximately 51 in January. The stock gained some ground before beginning its descent, falling to its close last Monday of less than 21.

EMC, meanwhile, started January at just under 13. The stock climbed steadily, reaching 18 by July and closing on Monday at 28¼.

Some Wall Street watchers said the worst may be over for Storage Tek. Alex. Brown & Sons, Inc. analyst Joseph Payne said a revamped product line will make Storage Tek more competitive in the coming year. Alex. Brown currently rates Storage Tek a Buy. The stock carried a rating of Strong Buy until Alex. Brown downgraded it to Buy status on Nov. 9.

"That's a more realistic growth scenario, considering the uncertainty of the incredibly mushy European market," Payne said.

However, Salomon Brothers, Inc. analyst John Dean rated Storage Tek a Hold in a Nov. 18 report. Dean said the economic climate, coupled with increasing competition in the storage market, will make the company's new product rollouts problematic. Prior to the most recent Iceberg delay, Salomon Brothers had rated Storage Tek a Buy.

EMC earned a Neutral rating as Alex. Brown recently initiated coverage of the Hopkinton, Mass.-based firm. Payne said he expects EMC's revenue to continue to grow but that the current stock value fairly represents EMC's performance. "EMC is certainly doing well; we're just looking for the correct valuation," Payne said.

EMC's successful redundant arrays of inexpensive disks (RAID) product lines — Harmonix for the IBM Application System/400 and Symmetrix for IBM-compatible mainframes — will face increased competition in 1993. Storage Tek plans to ship its Alpine RAID systems for the AS/400 this month, and IBM's new 9337 RAID system will also be a formidable foe.

As for Storage Tek's Iceberg, Payne said, "It will definitely be at the top of the market when it finally ships. It has the most ambitious objectives of anything out there."

— Derek Slater

Computerworld Stock Ticker

COMMUNICATIONS AND NETWORK SERVICES — Up 1.8%

Exch	52 Week	Range		Nov 25 3 pm	Wk Net Change	Wk Pct Change
OTC	24.00	9.63	3COM Corp.	22.38	-0.75	-3.2
NYS	70.63	56.25	American Info Techs Corp.	67.75	0.50	0.7
NYS	47.75	32.88	AT&T (H)	47.75	0.13	0.3
OTC	4.25	0.75	Artel Communication Corp.	0.97	-0.09	-8.8
OTC	22.00	10.25	Banyan Systems Inc.	21.00	0.50	2.4
NYS	49.75	40.25	Bell Atlantic Corp.	47.75	0.00	0.0
NYS	55.50	43.38	Bellsouth Corp.	49.25	-0.50	-1.0
NYS	6.75	3.63	Bolt, Beranek & Newman	5.13	0.13	2.5
NYS	74.13	40.88	Cabletron Systems (H)	72.63	-2.38	-3.2
OTC	31.00	17.75	Chipcom Corp.	27.50	0.25	0.9
OTC	74.75	24.13	Cisco Systems Inc. (H)	74.75	0.25	0.3
OTC	35.25	5.50	Compression Labs Inc.	14.00	0.00	0.0
OTC	3.38	0.88	Data Switch Corp.	2.38	0.50	26.7
NYS	23.63	13.75	Digital Comm. Assoc.	16.75	-0.38	-2.2
OTC	15.25	7.50	Digital Systems Int'l Inc.	12.00	0.25	2.1
OTC	19.25	3.63	DSC Communications	19.25	0.75	4.1
OTC	10.88	4.75	Fibronix Int'l Inc.	6.25	0.13	2.0
OTC	37.50	10.50	Filenet Corp.	23.25	2.25	10.7
OTC	3.38	1.13	Gandalf Technologies Inc.	1.75	0.00	0.0
OTC	2.25	0.69	Gateway Communications	1.31	-0.06	-4.5
NYS	5.50	2.38	General Datacomm Inds.	4.75	0.13	2.7
ASE	5.88	0.94	Go Video	3.25	0.38	13.0
NYS	35.75	28.88	GTE Corp.	34.13	-0.13	-0.4
NYS	70.88	50.00	ITT Corp.	70.88	0.25	0.4
OTC	38.38	26.50	MCI Commmunications Corp.	38.38	0.13	0.3
OTC	14.25	2.25	Microcom Inc.	4.25	-0.13	-2.9
NYS	18.25	9.50	Network Equipment Tech.	9.88	-0.13	-1.3
OTC	25.50	8.00	Network General	17.13	0.50	3.0
OTC	20.00	8.50	Network Systems Corp.	14.88	0.00	0.0
OTC	30.50	5.63	Newbridge Networks Corp. (H)	30.50	-0.13	-0.4
NYS	49.25	30.50	Northern Telecom Ltd.	41.50	-0.50	-1.2
OTC	33.50	22.50	Novell Inc.	31.63	0.38	1.2
NYS	88.38	69.13	Nynex Corp.	82.50	0.50	0.6
OTC	37.50	14.50	Octel Communications Corp.	23.00	1.13	5.1
OTC	9.88	3.38	Penril Data Comm. Ntwks.	4.38	0.25	6.1
OTC	53.00	10.25	Picturetel Corp.	25.25	-0.25	-1.0
OTC	18.75	7.00	Proteon Inc.	10.00	0.75	8.1
NYS	36.75	13.88	Scientific Atlanta Inc. (H)	36.75	0.38	1.0
NYS	70.50	56.25	Southwestern Bell Corp.	70.38	1.25	1.8
NYS	26.38	20.75	Sprint Corp.	26.38	0.88	3.4
OTC	22.13	4.88	Standard Microsystems Corp	21.25	1.38	6.9
OTC	67.50	15.25	Synoptics Communications	64.50	-0.50	-0.8
NYS	40.00	32.88	U S West Inc.	37.25	0.00	0.0
OTC	68.00	24.00	Wellfleet Communications (H)	68.00	2.75	4.2

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OTC	10.50	3.50	Advanced Logic Research	4.50	-0.25	-5.3
OTC	70.00	41.50	Apple Computer Inc.	56.50	-1.25	-2.2
OTC	24.50	11.25	AST Research Inc.	20.00	1.75	9.6
NYS	19.25	6.75	Commodore Int'l	7.25	-0.25	-3.3
NYS	43.13	22.13	Compaq Computer Corp.	40.88	-1.00	-2.4
OTC	39.25	15.00	Dell Computer Corp. (H)	36.25	1.00	2.8
OTC	7.75	0.88	Everex Systems Inc.	1.31	-0.06	-4.5
NYS	34.63	21.25	Harris Corp.	34.63	0.25	0.7
NYS	85.00	47.25	Hewlett Packard Co.	63.38	2.63	4.3
NYS	29.75	14.13	Silicon Graphics	25.88	-1.25	-4.6
OTC	36.13	20.75	Sun Microsystems Inc.	30.88	-1.38	-4.3
NYS	31.25	22.25	Tandy Corp.	29.13	1.63	5.9
NYS	11.13	5.00	Zenith Electronics	6.00	0.13	2.1
OTC	25.50	2.75	Zeos International Ltd.	3.38	-0.50	-12.9

LARGE SYSTEMS — Off 0.8%

Exch	52 Week	Range		Nov 25 3 pm	Wk Net Change	Wk Pct Change
ASE	20.63	7.75	Amdahl Corp.	8.00	0.00	0.0
NYS	16.38	4.75	Convex Computer	7.25	-0.25	-3.3
OTC	15.25	1.88	Cray Computer	4.63	-0.63	-11.9
NYS	49.50	19.00	Cray Research Inc.	23.50	2.00	9.3
NYS	18.13	7.13	Data General Corp.	11.00	-0.50	-4.3
NYS	65.50	31.63	Digital Equipment Corp. (L)	31.63	-0.50	-1.6
NYS	100.38	61.00	IBM (L)	65.50	3.50	5.6
OTC	13.25	5.50	Kendall Square Research	9.88	-0.38	-3.7
NYS	119.25	83.00	Matsushita Electronics	87.00	2.00	2.4
OTC	17.50	6.00	Pyramid Technology	10.25	-0.50	-4.7
OTC	17.88	9.88	Sequent Computer Sys.	14.50	0.25	1.8
OTC	18.38	2.75	Sequoia Systems Inc.	3.50	0.00	0.0
NYS	54.25	29.50	Stratus Computer Inc.	33.00	-1.00	-2.9
NYS	15.13	9.50	Tandem Computers Inc.	14.00	0.13	0.9
NYS	11.75	3.63	Unisys Corp.	8.63	0.00	0.0
ASE	7.50	0.25	Wang Labs Inc. (B)	0.44	0.00	0.0

SOFTWARE — Off 0.8%

Exch	52 Week	Range		Nov 25 3 pm	Wk Net Change	Wk Pct Change
OTC	68.50	25.25	Adobe Systems Inc.	33.63	1.88	5.9
OTC	44.25	10.25	Aldus Corp.	15.50	-0.75	-4.6
OTC	19.75	7.00	American Software Inc.	8.75	-1.50	-14.6
OTC	20.00	9.75	Ask Computer Systems	17.25	0.50	3.0
OTC	56.50	23.25	Autodesk Inc.	48.50	-1.25	-2.5
OTC	37.75	3.75	Bachman Info. Systems	6.63	1.00	17.8
OTC	43.00	32.00	BGS Systems Inc.	43.00	1.00	2.4
OTC	79.00	37.25	BMC Software Inc.	63.13	-1.75	-2.7
OTC	25.50	13.00	Boole & Babbage	20.75	-1.75	-7.8
OTC	86.75	24.25	Borland Int'l Inc.	24.25	0.25	1.0
OTC	10.50	3.63	CE Software	4.25	0.00	0.0
ASE	29.75	9.16	Cheyenne Software Inc.	26.75	-0.75	-2.7
OTC	13.13	5.63	Cognos Inc.	7.25	0.13	1.8
NYS	19.50	8.63	Computer Associates	18.25	0.50	2.8
NYS	12.38	4.75	Computervision Corp.	5.25	-0.63	-10.6
OTC	20.00	6.75	Comshare Inc.	12.88	1.38	12.0
OTC	47.88	6.00	Easel Corp.	11.75	0.25	2.2
OTC	25.00	11.50	Group I Software	12.50	-0.50	-3.8
OTC	6.63	3.50	Hogan Systems Inc.	6.00	0.38	6.7
OTC	36.25	18.50	Information Resources	30.75	0.50	1.7
OTC	33.50	5.88	Informix Corp. (H)	31.63	-0.88	-2.7
OTC	22.38	11.00	Intergraph Corp. (L)	12.88	1.13	9.6
OTC	15.00	7.00	Interleaf Inc.	13.25	0.00	0.0
OTC	20.25	10.25	Intersolv Inc.	14.50	0.75	5.5
OTC	21.38	9.50	Knowledgeware Inc.	15.00	0.13	0.8
OTC	50.50	28.75	Legent Corp.	49.88	0.13	0.3
OTC	38.75	14.75	Lotus Development	21.00	0.25	1.2
OTC	7.38	1.88	Meca Software	4.00	0.00	0.0
OTC	22.25	5.25	Mentor Graphics	8.00	-0.25	-3.0
OTC	38.25	27.25	Micro Focus	37.75	0.25	0.7
OTC	20.50	6.50	Micrografx Inc.	8.50	-1.75	-17.1
OTC	95.00	61.84	Microsoft Corp.	90.50	-4.50	-4.7
OTC	24.75	12.00	Oracle Corp.	20.63	-1.63	-7.3
OTC	56.25	20.13	Parametric Technology (H)	52.25	-2.00	-3.7
OTC	11.00	3.50	Phoenix Technologies	5.13	-1.38	-21.2
OTC	25.25	11.25	Platinum Technology	22.00	1.50	7.3
OTC	59.00	29.00	Progress Software Corp.	59.00	0.50	0.9
OTC	26.63	4.00	Quarterdeck Office Sys.	5.38	-0.38	-6.5
OTC	32.75	11.75	Rainbow Technologies Inc.	22.13	0.13	0.6
OTC	22.75	4.00	Rasterops	7.63	0.13	1.7
OTC	17.25	3.63	Ross Systems	7.38	-0.25	-3.3
OTC	18.50	8.50	Sapiens USA Inc.	18.50	0.88	5.0
OTC	26.25	6.75	Software Publishing Corp.	8.75	-1.00	-10.3
OTC	8.00	2.00	Software Toolworks Inc.	5.75	-0.13	-2.1
OTC	7.25	0.75	Spinnaker Software	1.63	-0.50	-23.5
OTC	16.50	3.25	State of the Art	6.50	-0.50	-7.1
NYS	25.25	13.75	Sterling Software Inc.	20.88	0.88	4.4
OTC	30.00	8.00	Struct. Dynamics Research	11.88	-0.38	-3.1
OTC	45.25	16.75	Sybase Inc.	43.25	1.00	2.4
OTC	51.00	5.88	Symantec Corp.	11.88	-0.63	-5.0
NYS	15.50	5.25	Systems Center Inc.	7.50	1.50	25.0
OTC	37.50	16.66	System Software Assoc.	37.50	3.63	10.7
OTC	13.25	2.50	Trinzic Corp.	3.50	0.00	0.0
OTC	23.75	14.50	Walker Interactive Systems	21.38	-1.13	-5.0
OTC	5.38	1.38	Wordstar	2.06	0.00	0.0

SEMICONDUCTORS — Off 0.5%

Exch	52 Week	Range		Nov 25 3 pm	Wk Net Change	Wk Pct Change
NYS	21.50	7.38	Advanced Micro Devices	17.63	-0.50	-2.8
NYS	13.63	7.13	Analog Devices Inc.	13.63	1.13	9.0
OTC	15.00	6.75	Atmel Corp. (H)	15.00	-0.13	-0.8
OTC	14.13	3.25	Chips and Technologies	4.88	-0.13	-2.5
NYS	18.38	7.38	Cypress Semiconductor Corp	10.75	-0.88	-7.5
NYS	13.75	6.75	Dallas Semiconductor (H)	13.75	-0.50	-3.5
OTC	70.75	39.75	Intel Corp.	70.00	-0.25	-0.4
NYS	9.88	4.88	LSI Logic Corp.	9.00	0.13	1.4
NYS	22.38	12.13	Micron Technology	19.13	-0.75	-3.8
NYS	101.38	57.50	Motorola Inc.	99.75	-0.13	-0.1
NYS	14.13	5.25	National Semiconductor	12.75	-0.38	-2.9
OTC	27.00	8.25	Sierra Semiconductor	14.25	0.25	1.8
NYS	52.25	26.00	Texas Instruments	48.00	-1.50	-3.0
OTC	10.50	6.00	VLSI Technology	7.25	-0.13	-1.7
OTC	7.00	2.13	Weitek	5.25	0.25	5.0
ASE	8.00	2.00	Western Digital Corp.	7.50	0.13	1.7
OTC	31.00	14.50	Xilinx	21.00	0.63	3.1
OTC	33.50	15.25	Zilog Inc.	30.75	-0.75	-2.4

PERIPHERALS AND SUBSYSTEMS — Off 0.2%

Exch	52 Week	Range		Nov 25 3 pm	Wk Net Change	Wk Pct Change
OTC	11.25	3.63	Archive Corp. (H)	11.13	0.00	0.0
OTC	26.75	13.75	Banctec Inc.	25.75	-0.25	-1.0
OTC	23.50	9.25	Cambex Corp.	17.00	0.00	0.0
ASE	15.13	5.66	Cognitronics Corp.	15.13	0.00	0.0
NYS	23.88	12.50	Conner Peripherals	19.13	-0.75	-3.8
OTC	24.88	14.25	Data Race Inc.	21.88	0.13	0.6
ASE	19.66	4.75	Dataram Corp.	11.38	0.25	2.2
NYS	31.00	8.63	EMC Corp.	20.25	0.93	4.8
OTC	8.88	4.75	Emulex Corp. (H)	8.75	0.25	2.9
OTC	23.00	13.25	Evans & Sutherland	17.25	-0.25	-1.4
OTC	40.63	12.00	Exabyte	20.00	1.63	8.8
OTC	36.88	15.75	Intelligent Info. Systems	36.50	2.50	7.4
OTC	11.25	4.75	Iomega Corp.	7.75	-0.75	-8.8
OTC	34.75	10.25	IPL Systems Inc.	12.00	0.25	2.1
OTC	22.75	10.75	Komag Inc.	22.75	0.75	3.4
OTC	17.88	4.38	Maxtor Corp. (H)	17.88	0.50	2.9
OTC	12.63	7.13	Micropolis Corp.	9.00	0.00	0.0
NYS	107.00	85.38	3M Corp	102.50	2.50	2.5
OTC	6.75	3.50	Printronix Inc.	4.75	-1.00	-17.4
NYS	18.00	6.88	QMS Inc.	8.75	-0.13	-1.4
OTC	18.00	8.88	Quantum Corp.	14.88	0.38	2.6
OTC	12.75	3.75	Radius Inc.	6.88	0.13	1.9
NYS	14.25	6.50	Recognition Equipment	12.75	0.13	1.0
OTC	13.88	5.63	Rexon Inc.	11.50	-1.25	-9.8
OTC	19.63	7.75	Seagate Technology (H)	18.88	-0.13	-0.7
NYS	78.00	20.38	Storage Technology (L)	20.38	-0.63	-3.0
NYS	22.88	16.50	Tektronix Inc.	20.25	-0.50	-2.4
NYS	82.25	60.25	Xerox Corp.	78.25	1.13	1.5

SERVICES — Up 0.5%

Exch	52 Week	Range		Nov 25 3 pm	Wk Net Change	Wk Pct Change
OTC	22.88	11.84	American Mgmt. Systems	22.88	1.13	5.2
NYS	5.38	3.00	Anacomp Inc.	3.75	-0.38	-9.1
OTC	22.00	12.50	Analysts Int'l	21.25	-0.75	-3.4
NYS	51.25	36.50	Auto Data Processing	51.25	0.75	1.5
NYS	17.25	7.06	Ceridian Corp.	15.00	-0.38	-2.4
NYS	23.22	12.50	Comdisco Inc.	15.63	0.00	0.0
OTC	13.50	6.75	Computer Horizons	8.00	-0.75	-8.6
NYS	84.88	57.00	Computer Sciences	78.00	3.13	4.2
NYS	10.13	7.00	Computer Task Group	8.63	0.50	6.2
OTC	40.50	15.00	CompUSA Inc.	35.25	-0.75	-2.1
OTC	19.25	6.00	Corporate Software	11.00	-1.00	-8.3
OTC	30.75	7.75	Egghead Discount Software	10.25	0.63	6.5
NYS	33.06	25.25	General Motors E (EDS)	32.25	1.75	5.7
OTC	30.38	6.25	Intelligent Electronics	8.75	-0.38	-4.1
OTC	14.88	6.63	Merisel	10.63	0.38	3.7
OTC	15.75	5.75	Microage Inc.	7.50	-0.38	-4.8
OTC	40.00	18.16	Paychex	38.75	0.50	1.3
NYS	78.50	55.00	Policy Management Sys.	77.75	1.63	2.1
NYS	50.63	29.75	Reynolds and Reynolds (H)	50.63	1.13	2.3
OTC	32.00	22.00	SEI Corp.	27.75	-0.25	-0.9
OTC	24.38	16.88	Shared Medical Systems	21.88	0.38	1.7
OTC	30.00	16.00	Sungard Data Systems	28.25	0.50	1.8
NYS	3.63	1.13	Ultimate Corp.	2.13	0.25	13.3

KEY: (H) = New annual high reached in period (L) = New annual low reached in period

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In Brief

SHL losses narrow

SHL Systemhouse, Inc. posted a fourth-quarter net loss of $7.4 million (Canadian), compared with a $30.9 million loss in the same period last year. Sales in the period ended Aug. 31 rose 24% to $190.4, the Ottawa-based systems integrator said. For the year, SHL posted a $9.5 million loss on revenue of $738.6 million, a 21% jump from last year.

Intersolv profits up

Intersolv, Inc. recorded second-quarter net earnings of $1.5 million, a 25% increase from the same period last year. Sales rose 15% to $21.2 million in the quarter ended Oct. 31, the Rockville, Md., application tools vendor said.

Conner acquisition

Disk drive maker **Conner Peripherals, Inc.** has agreed to acquire tape systems maker **Archive Corp.** in a stock transaction valued at $176 million. Conner, based in San Jose, Calif., will buy outstanding Archive stock for $11.25 a share. The offer is contingent on Conner's purchase of at least 51% of Archive's common stock.

Praxis buyback

Employees at **Praxis International, Inc.** — the parent corporation of **Computer Corporation of America** and two other computer firms — purchased all of its outstanding common and preferred stock from **Crownx, Inc.** in Toronto. The Cambridge, Mass., company is now 100% owned by its employees.

Wetmore is COO

Legent Corp. has named David Wetmore, former chairman and chief executive officer at recently acquired **Goal Systems International, Inc.**, as chief operating officer. Wetmore assumes responsibility for marketing and customer services, the Vienna, Va., company said.

Outsourcers assess IBM tactics

Rivals walk a fine line between concern, dependence on Big Blue for products

By Mark Halper
WASHINGTON, D.C.

Outsourcing vendors are watching closely as the U.S. Department of Justice ramps up its antitrust investigation of IBM's outsourcing business.

For many outsourcers, the issue is a delicate one in which they must balance their concern over IBM's possibly unfair advantage with their reliance on the computer giant for products.

Users are concerned that an eventual Justice Department ruling could impact any outsourcing agreement they sign with IBM.

While few of IBM's rivals are willing to publicly state that they believe IBM is violating the 1956 Consent Decree, they acknowledge that the case deserves the attention that the Justice Department is giving it.

Separate service?

At issue is whether IBM's outsourcing practice constitutes service bureau work as defined in the decree [CW, Nov. 9]. The decree stipulated that IBM could participate in the service bureau business only through a separate subsidiary. The decree also barred IBM from offering the subsidiary special discounts.

Russell West, senior vice president of strategic planning for lessor and outsourcer Comdisco, Inc., said, "The question is, 'Is outsourcing a repricing of service bureau work?' You have to be an incredibly good lawyer to convince anyone that it's materially different."

Don Seiden, president of Computer Reserves, Inc., a Pine Brook, N.J., computer services placement firm, offered an answer. "Services are more sophisticated, but I don't think it's substantially changed in 30 years," he said. "We called it timesharing, we called it remote processing. Now we call it outsourcing."

The Justice Department recently escalated its investigation, largely at the urging of Dallas-based outsourcer Affiliated Computer Systems, Inc. (ACS). ACS has complained that IBM's formation of its Integrated Systems Solutions Corp. (ISSC) outsourcing subsidiary did not conform to the decree.

ACS has asked IBM to provide it with details on how much IBM charges ISSC for products. It has also requested that IBM reveal how much ISSC charges the parent for any processing it provides to them. ACS claims that the decree requires IBM to provide this information to competitors on request. IBM has responded to ACS that it offers the same terms to ISSC as to any other "service bureau."

Moving on up

IBM is expected to push ahead of Computer Sciences to take over as the second-largest outsourcing vendor by 1995

1991		1995 (estimated)	
Company	Annual revenue (in millions)	Company	Annual revenue (in millions)
EDS	$1,200	EDS	$3,300
Computer Sciences	$400	IBM	$1,200
IBM	$350	Computer Sciences	$1,000
Fiserv	$225	Perot Systems	$500
Systematics	$225	Affiliated Computer Systems	$425
Others	$1,135	Others	$2,325
Total	$3,535	Total	$8,750

Source: Merrill Lynch & Co.

At a glance

1956: Consent Decree issued.

April 1991: gCS asks gdapso to formally complain to the Justice Department.

May 1991: IBM forms wholly owned subsidiary ISSC to handle its outsourcing contracts.

Aug. 4, 1991: gCS sends letter to IBM requesting information on ISSC. IBM responds in September.

November 1992: Justice Department elevates probe.

Doug Tayle, director of marketing at The Genix Group, a Dearborn, Mich., outsourcer, said he hopes IBM reveals more financial information about ISSC. "I think IBM owes an obligation to shareholders and the industry at large to disclose financial details of its subsidiaries," he said.

IBM could be giving ISSC an unfair break if it is actually allowing ISSC to operate at a loss in the interest of winning or keeping hardware and software accounts, Tayle noted. "It's a very muddy issue," he said. "If IBM [ISSC] would show that its performance stands basic financial scrutiny, then fair is fair. If ISSC is not profitable, explain why it's not profitable — is it because IBM allows it to run at a loss to protect the rest of their business?"

On the sidelines

Sources said outsourcing leader Electronic Data Systems Corp. is closely monitoring the case. EDS competes fiercely with ISSC for outsourcing jobs and is one of IBM's largest customers. Kevin Kaspar, vice president of corporate marketing at Fiserv, Inc., a Milwaukee-based banking industry outsourcer, described Fiserv as "an interested observer" in the Justice Department's investigation.

"We're relying on the opinion of others," he said, referring to the Justice Department.

Fiserv, he said, has a good relationship with IBM and uses the Application System/400 as the platform for its comprehensive banking software offering. Some cast the matter in the light of an incipient IBM breakup, viewing any eventual ruling against IBM as one more chunk that IBM will spin off its cumbersome mass for a combination of business and legal reasons.

Big Blue's defense

An executive at IBM's Tarrytown, N.Y.-based ISSC outsourcing subsidiary last week said that ISSC's current communication with the Justice Department regarding the Consent Decree is no different from discussions the two parties have had during the decree's 36-year span.

But the executive, who asked not to be identified, did not dismiss the possibility that these discussions could lead either to modification of the decree by the department or to adjustments by IBM. The executive described questions regarding those possibilities as "speculation."

The decree is an agreement — not a law — between IBM and the Justice Department and is subject to change, the executive explained.

The executive declined to comment when asked if IBM considers the Justice Department's recent elevation of the case to the deputy assistant attorney general level to mean that the department will soon take action — either for or against IBM.

The executive repeated earlier assertions that IBM is in compliance with the Consent Decree, which bars IBM from participating in the service bureau business except through a separate subsidiary that does not get special pricing on IBM hardware and software.

Contrary to assertions by IBM detractors, the decree permits IBM's sales force to offer ISSC services and, while ISSC cannot use the IBM moniker in its own name, the decree does permit it to use the parent's name in other contexts, the executive said.

He said the service bureau of 1956 "is a far cry from today's outsourcing business," explaining that service bureau customers 36 years ago typically could not afford their own computers.

— Mark Halper

Trends PC LAN servers

Wireless technology — up and coming

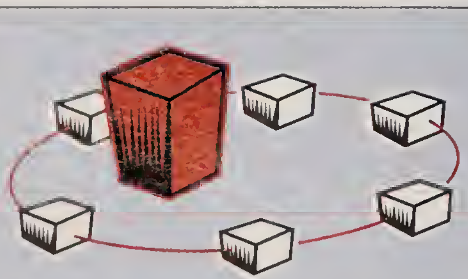
(Percent of U.S. revenue)

	Wired PC	Wireless PC
1991	95.8%	4.2%
1992	89.7%	10.3%
1993	79.0%	21.0%
1994	69.5%	30.5%

Superservers, a growing market

(Percent of U.S. shipments)

	PC	Superserver
1991	80.2%	19.8%
1992	78.5%	21.5%
1993	76.3%	23.7%
1994	72.3%	27.7%

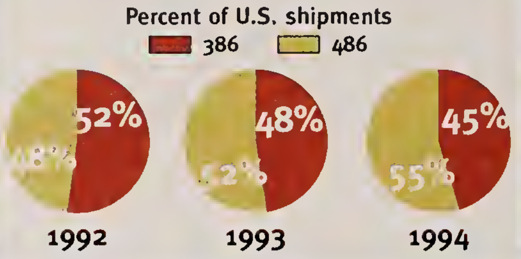


Anticipated compound annual growth rate of revenue from 1991 to 1998

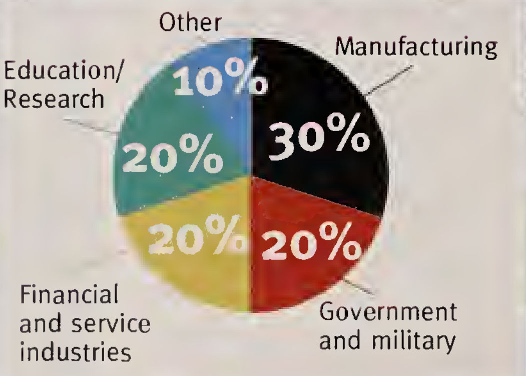
386	6.0%
486	8.9%

386 vs. 486

486-based servers will pull ahead in 1993



Revenue by industry



All figures are rounded.
Source: Market Intelligence Research Corp., Mountain View, Calif.

The Fifth Wave

OH, WAIT, WAIT, WAIT! I WAS READING YOU THE ANSWER FROM THE GARDENING COLUMN, WHICH IS RIGHT NEXT TO "ASK MR. COMPUTER".

Inside Lines

A twist on urban renewal

As restructuring gets fully under way at DEC, sources said the company is setting up "enterprise zones" for products that would otherwise be put out to pasture or passed over to third parties for support and services. Product managers or others would have the opportunity to prepare a business plan and bring it in front of management, who would then evaluate and assign "property" in the form of desk or cubicle space and give the staffers some autonomy. "Products which might not be selling well for DEC could be profitable for a two- to four-person outfit," one source said.

Docket dynamics

Symantec and Borland were supposed to go to court early last week, but the date has been pushed back to Jan. 19. Symantec was given a chance to show the judge why it should not be held in contempt of court for allegedly violating a restraining order preventing the company from receiving "Borland proprietary" information. Borland claims that Symantec violated the order when a former Borland employee, now working at Symantec, attempted to retrieve a number of electronic documents after leaving Borland.

The big squeeze

Dell's interest in the retail channel appears to be waning, or perhaps it no longer feels love for CompUSA and its customers. One long-term Dell user buys Dell through CompUSA to save on shipping expenses and improve availability. (He says it takes up to six weeks to get product from Dell that CompUSA gets him in a week.) The user says Dell has spent the last six months squeezing him to again buy directly from Dell. Lately it has told him his 4% to 6% corporate discount will be reduced through CompUSA, though the retailer hasn't changed his pricing. Dell also warned the customer that his models will no longer be sold through CompUSA.

Snow jobs?

If you haven't heard from Steve Jobs' Next lately, it's because it has been quietly pushing back the arrival dates of a few projects. Reportedly, a version of the company's NextStep software for Intel microprocessors that was promised for this quarter won't ship now until the middle of next year, insiders say. And a public stock offering that Jobs once said could be coming shortly has also been pushed back, although it's reportedly still in the works.

Casting a big shadow

Gateway 2000 is expected to announce today that it will have sold $750 million worth of systems in the first three quarters of this year, putting it on target to sell $1 billion worth of systems this year. Nice results, if completely unsupportable — Gateway is private and reveals no figures on units shipped, profitability or long-term debt, though analysts say the company is strong.

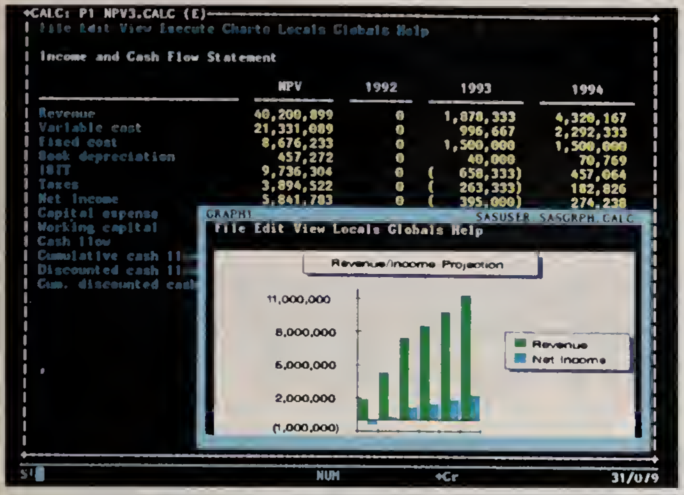
Helping an old friend

Cisco is actually moving faster than expected to extend its routers' Synchronous Data Link Control support to older IBM devices that use half duplex or the Non Return to Zero Inverted coding option. That capability will start general shipment on Dec. 15 on a "quasi-daughterboard," the company said last week.

Point-and-click spying

There's a new wrinkle in the corporate espionage game, according to Don Delaney, a senior investigator with the New York State Police. An individual was recently spotted on New York City's Helmsley building pointing a receiving antenna at the nearby offices of Chemical Bank in what was purported to be an attempt to capture the screen image on Chemical's PCs.

One PC reseller recently told Computerworld *that she loses 2% on every PC that moves out the door. The only reason she's still in business is to sell profit-making peripherals, the reseller said. "Let's hope that lasts," she added. Do you have any other tales of woe? Phone, fax or CompuServe News Editor Alan Alper with news tips at (800) 343-6474, (508) 875-8931 or 76537,2413, respectively. Or try* Computerworld's *24-hour voice-mail tip line at (508) 820-8555.*



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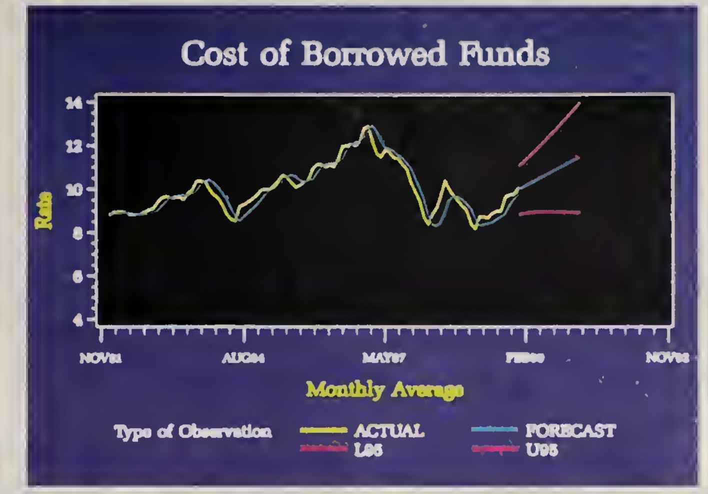
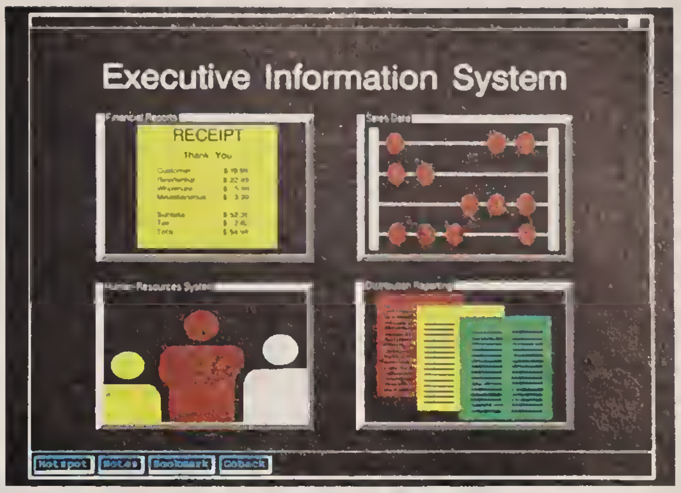
Income and Cash Flow Statement

                               NPV        1992        1993          1994
Revenue                 40,200,899           0      1,878,333     4,320,167
Variable cost           21,331,089           0        996,667     2,292,333
Fixed cost               8,676,233           0      1,500,000     1,500,000
Book depreciation          457,272           0         40,000        70,769
EBIT                     9,736,304           0   (    658,333)      457,064
Taxes                    3,894,522           0   (    263,333)      182,826
Net income               5,841,783           0   (    395,000)      274,238
Capital expense
Working capital
Cash flow
Cumulative cash fl
Discounted cash fl
Cum. discounted cash
```

Financial Planning



Econometric and Time Series Analysis



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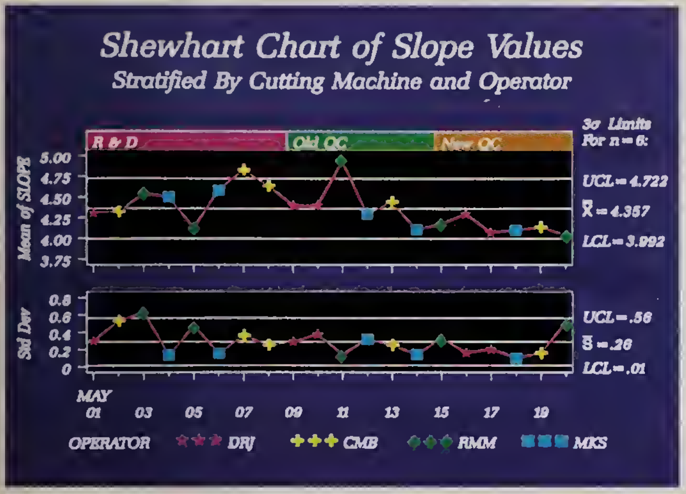
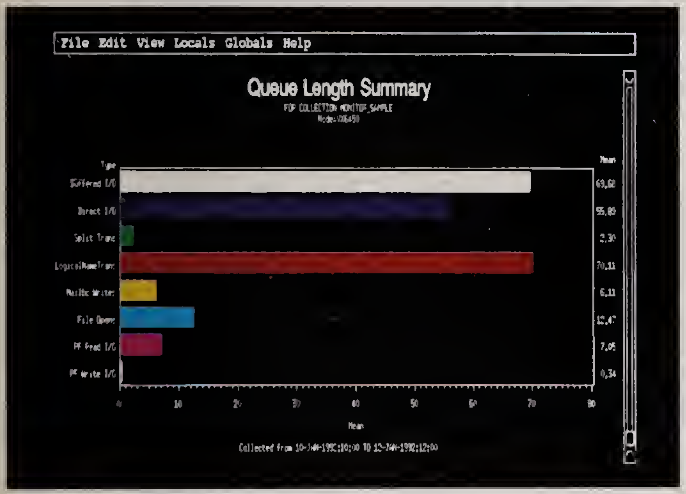


Quality Improvement



Computer Performance Evaluation

SAS Institute Inc.
Software Sales Division
SAS Campus Drive ☐ Cary, NC 27513
Phone 919-677-8200 ☐ Fax 919-677-8123

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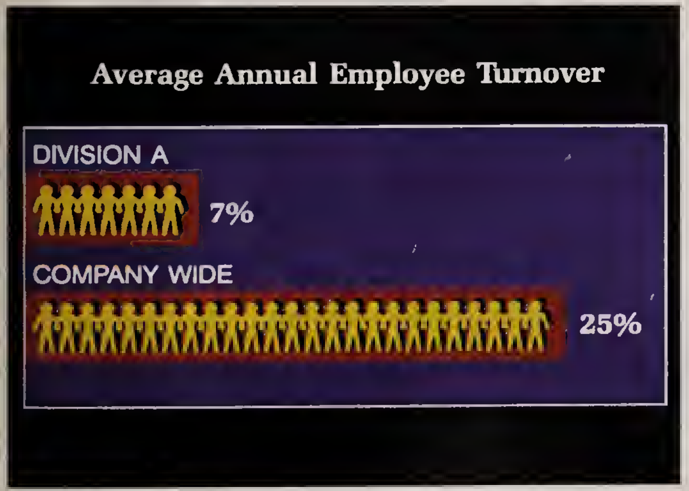
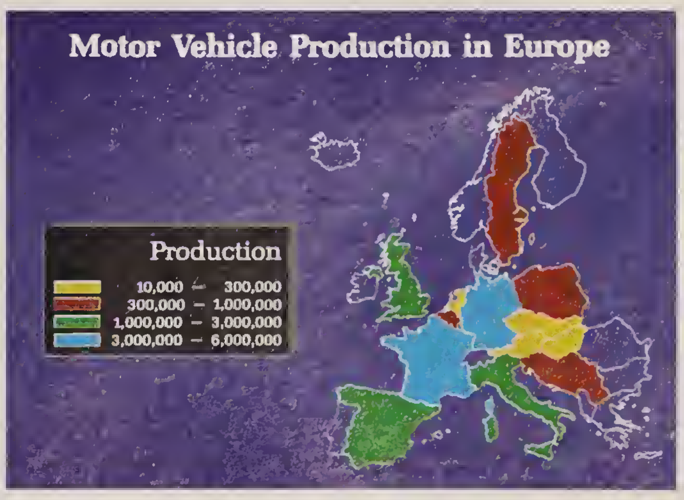
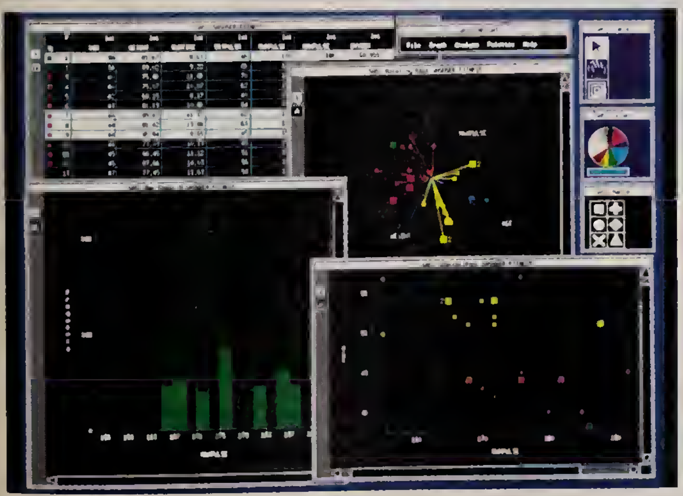


Reporting

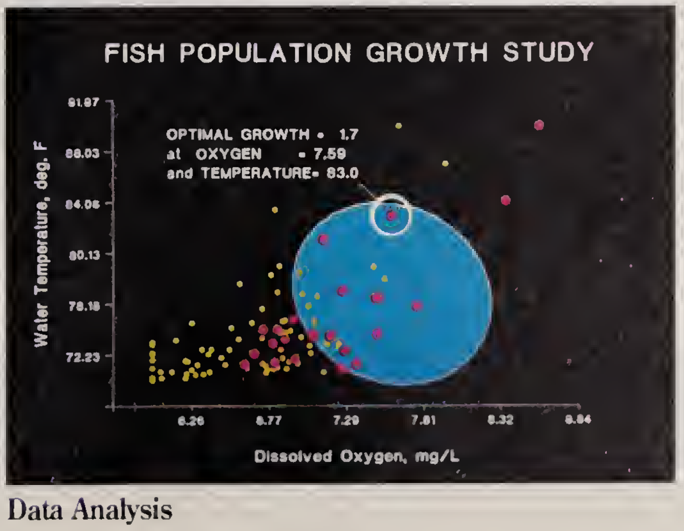
Market Research



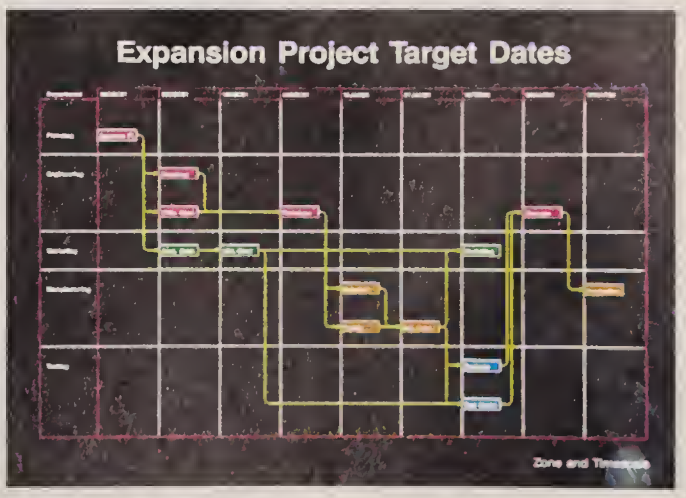
Business Graphs



Visualization



Data Analysis



Project Management

New!

2 out of 3 users prefer Quattro Pro for Windows

An independent study proves it

It's a fact: Two out of three Windows spreadsheet users tested prefer Quattro® Pro for Windows. That's the result of a study conducted by Usability Sciences Corporation, a highly regarded, independent testing lab used by major software publishers, including Lotus.

Built with Borland's renowned object-oriented technology, Quattro Pro for Windows is packed with hot new features that make it more powerful, yet easier to use, than any other spreadsheet.

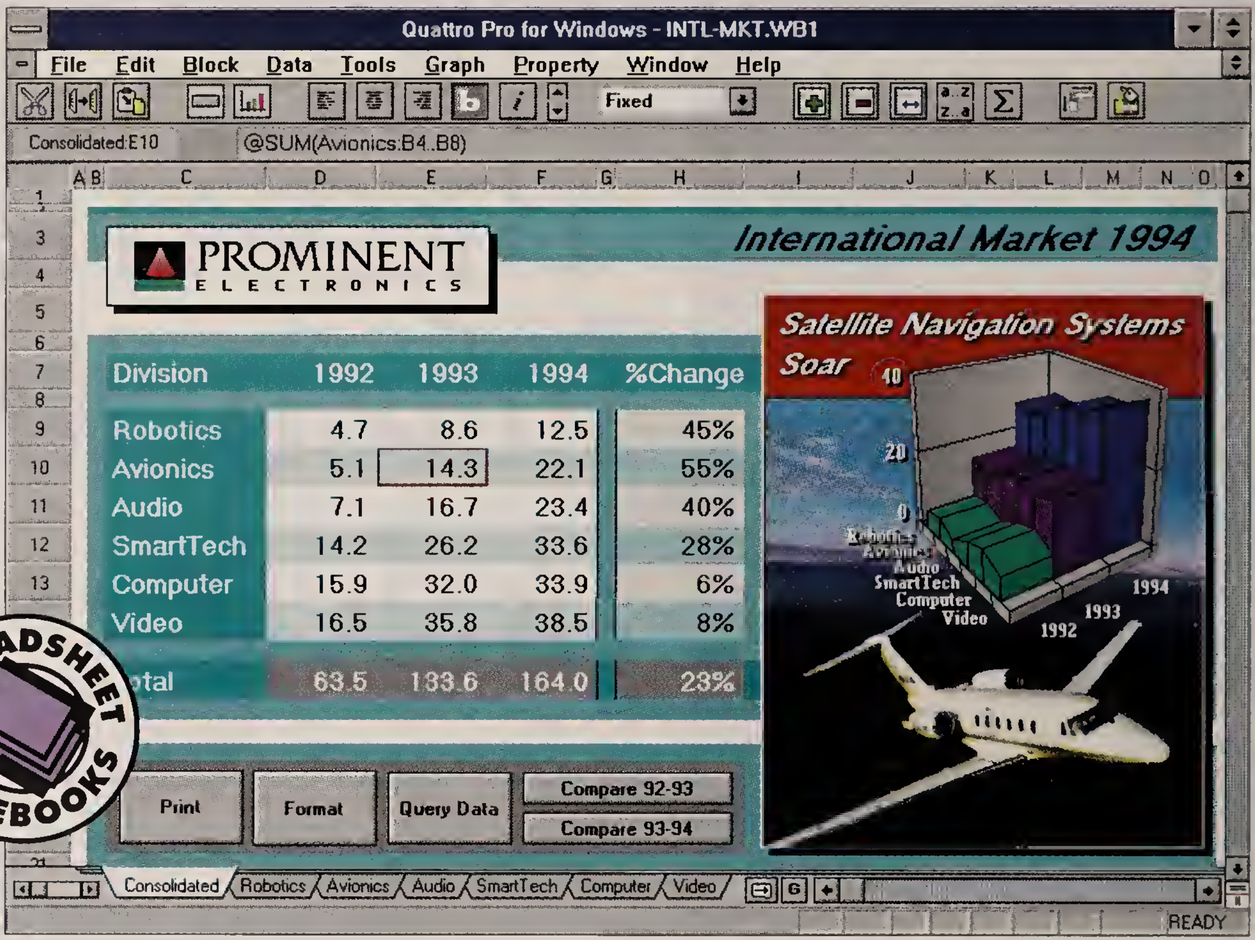
NEW! Spreadsheet Notebooks with customizable tabs are nothing less than a revolution in spreadsheet ease (*and speed*) of use. Now you can intuitively organize and manage your spreadsheet data as easily as flipping through a notebook.

NEW! Object Inspector™ menus end the hassle of searching through menus. Just click the *right* mouse button anywhere on the screen to get a list of what you can change and change it right there.

NEW! Database Desktop™ gives you the easiest way yet to get Paradox® and dBASE® data into your spreadsheet.

NEW! SpeedBars™ are context-sensitive and customizable. SpeedBar icons give you pushbutton access to your most frequently used commands.

NEW! SpeedFill™ and **SpeedFormat™** slash spreadsheet setup time by automatically filling in worksheet headings and formats.



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PROMINENT ELECTRONICS

International Market 1994

Division	1992	1993	1994	%Change
Robotics	4.7	8.6	12.5	45%
Avionics	5.1	14.3	22.1	55%
Audio	7.1	16.7	23.4	40%
SmartTech	14.2	26.2	33.6	28%
Computer	15.9	32.0	33.9	6%
Video	16.5	35.8	38.5	8%
otal	63.5	133.6	164.0	23%

NEW! Presentation Graphics and drawing tools that rival those of Freelance and Harvard Graphics are built-in. You don't need to buy a separate graphics package.

YES! Compatible with Lotus 1-2-3 files, macros, and publishing styles (including Allways, Impress, and WYSIWYG). It also supports Excel .XLS files.

Don't settle for second best

Borland has radically simplified the use of the world's most feature-rich spreadsheet. Get Quattro Pro for Windows today. It's the most advanced, yet easiest-to-use spreadsheet ever.

90-DAY GUARANTEE MONEY-BACK

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BORLAND

Software Craftsmanship

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NEW INDEPENDENT STUDIES CONFIRM:

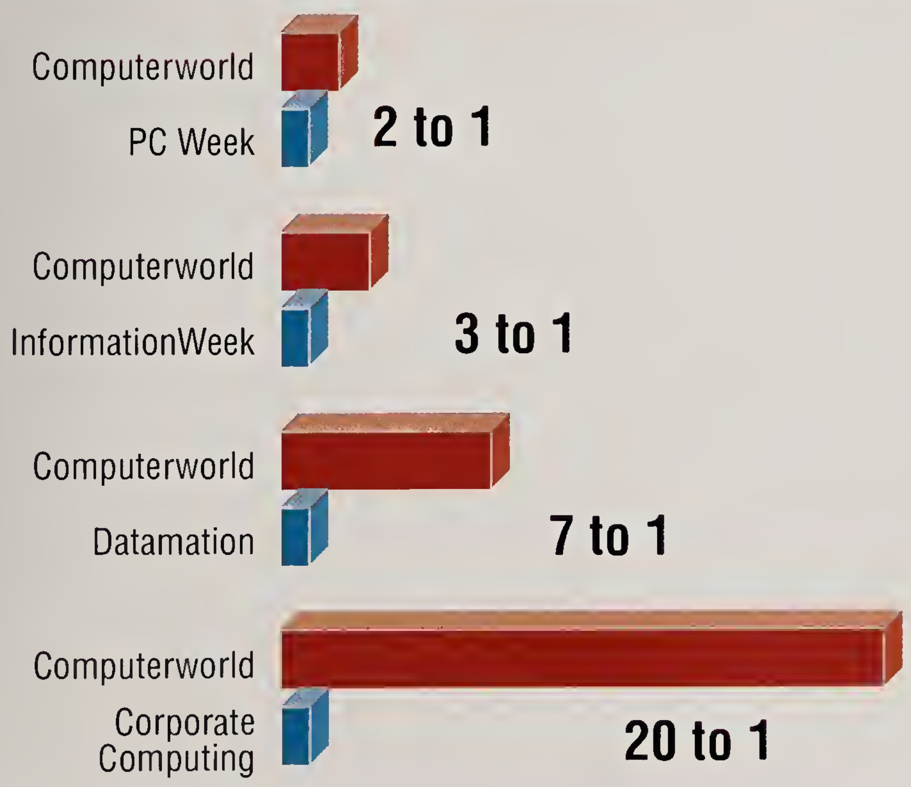
COMPUTERWORLD

IS THE MOST USEFUL AND BEST-READ IS PUBLICATION

MRI Information Systems Management Reader Preference Study

October 1992

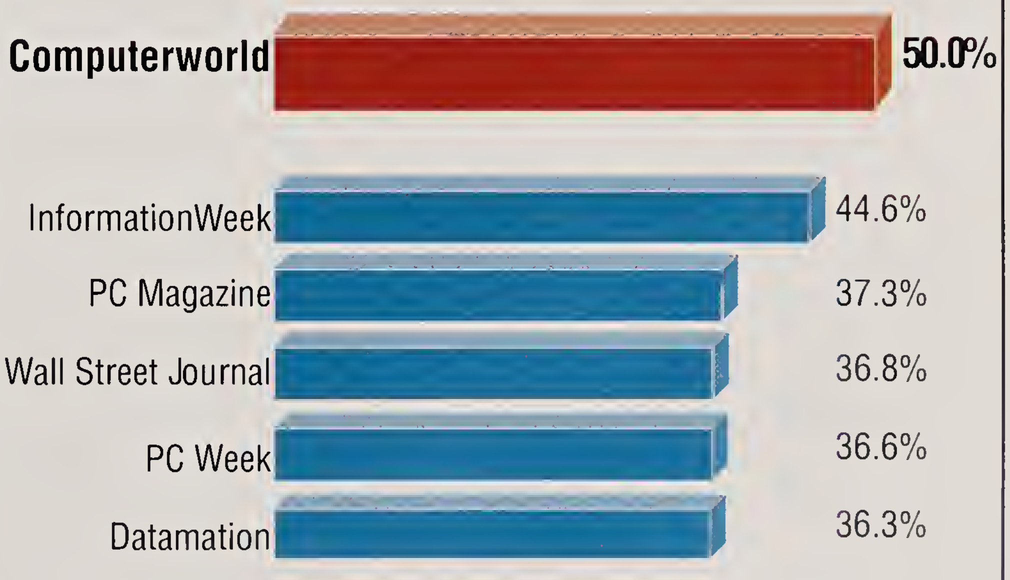
Most Useful Publication
(Margin of Preference)



Adams Company Information Technology Management Study

November 1992

Job Function:
MIS/Information Systems Management



Read 4 out of 4 issues

For copies of these studies, contact your Computerworld sales representative.

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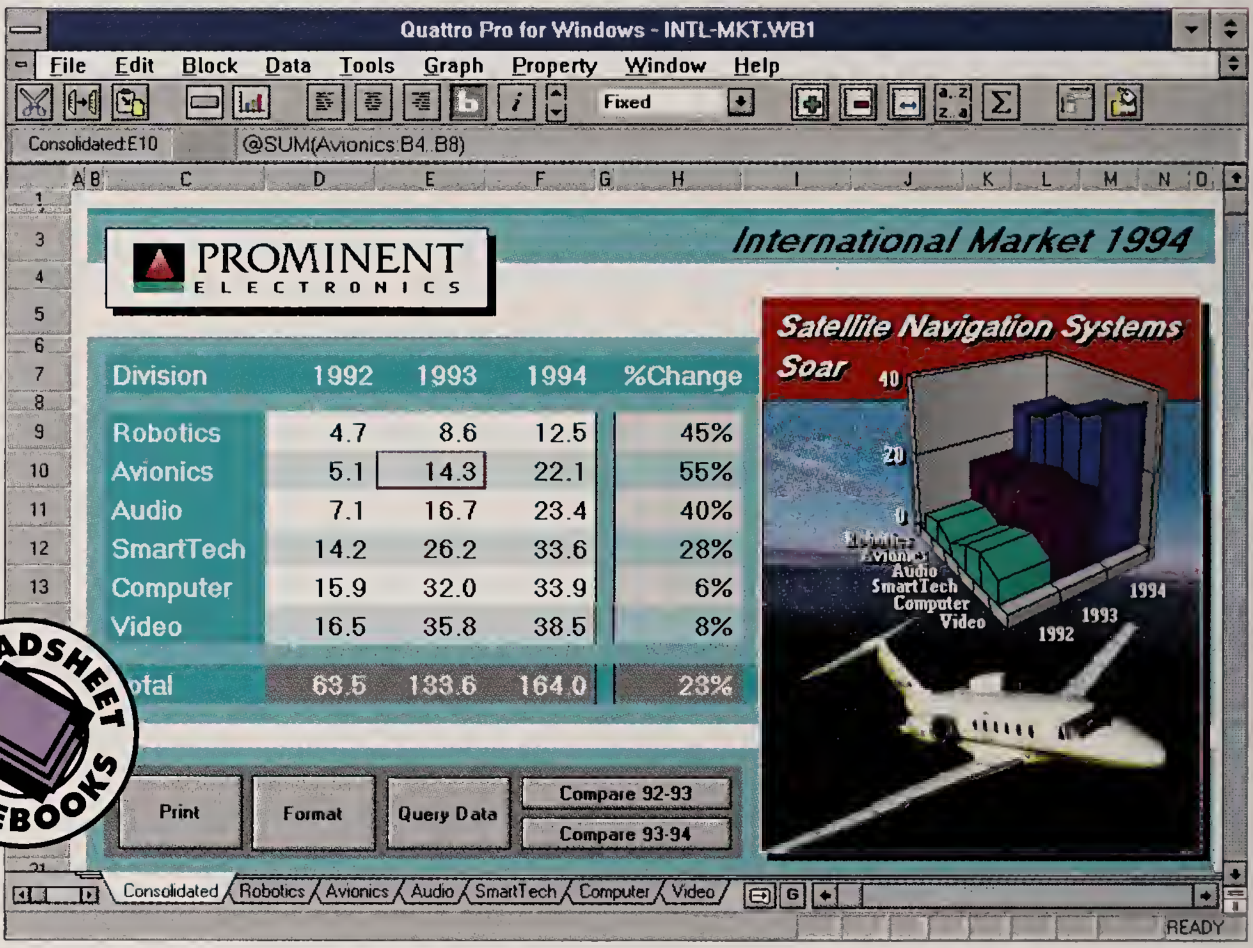
SPREADSHEET NOTEBOOKS



Quattro Pro for Windows - INTL-MKT.WB1

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